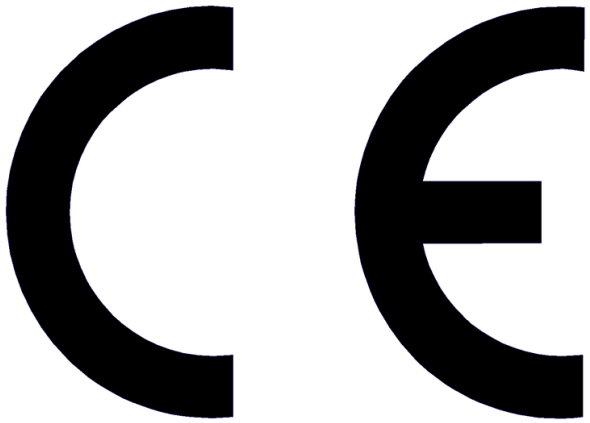
EVO 3

SERVICE MANUAL

Rev D 2014-10-11

DECLARATION OF CONFORMITY



The manufacturer

Neatech.it

4/A, A. de Curtis, 80040, Cercola (NA), Italy

under its responsibility, states that

the wheelchair EVO3

satisfies the conditions laid down by the European Directive 93/42 and its subsequent updates;

according to the criteria for classification of Annex IX of this directive, the EVO3 is classified as

class I medical device

It also complies with the requirement of the harmonized standards:

UNI EN 12182 – Technical aids for disabled person

UNI EN 12184 – Electrically powered wheelchairs, scooters and their chargers

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Service manual is intended for technical personnel to maintain and repair wheelchairs. It is important to follow the instructions contained in this manual in order to professionally work with the wheelchair.

The qualified personnel who works with wheelchairs must comply with all provisions of occupational safety and common sense in order to preserve his own safety.

The manufacturer declines all responsibility for any accidents occurring during the working with wheelchairs

MODIFICATIONS

Any unauthorized modifications to the wheelchair may increase the risk of personal injury and damage to the wheelchair. All modifications should be done by an authorized service center.

Do not use any unauthorized accessories or spare parts on the wheelchair. Do not use the wheelchair in combination with other medical devices without first having considered any risk due to combination of more product.

MANUFACTURER

For any need not expressly explained in this manual, please contact the manufacturer.

Neatech.it

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DISPOSING

This product and all its components can not be treated as household waste. For more detailed information on how recycling and disposal this product contact your local waste disposal service.

1 WHEELCHAIR PRESENTATION

Thank you for purchasing EVO3 electronic wheelchair.
EVO3 is a battery powered wheelchair. Its intended use is to provide indoor mobility to person limited to seated position that are capable to operate and drive an electronic wheelchair. Though EVO3 was designed to be used mainly indoors it is possible to have lights and to use the wheelchair even in some outdoor environments.

Motors	2x 220 W
Batteries	2x55Ah 12V
Electronic Tilt (45°) + Electronic Negative Tilt (45°)	
Electronic Lift (30 cm)	
Electronic Reclining Backrest (0-170°)	
Electronic Elevating Central Mounted Footrest	

WARNING: It is prohibited to use wheelchair or its parts for any purpose other than that indicated. For a correct use please follow the instructions given in this manual. **NEATECH.IT disclaims any responsibility for damages caused by improper use of aids.**

The information in this manual may be subject to change without notice. All information, pictures and specifications are based upon the product information that was available at the time of printing. They are representative examples and not intended to be exactly as the actual wheelchair

2 USER INFORMATION

2.1 Warnings

TIPPING HAZARD

Any transport on a slope greater than the maximum security slope can be dangerous.

ELECTROMAGNETIC RADIATION DANGER

The behavior of the wheelchair while driving may be affected by electromagnetic fields created by transceivers such as: Citizens band (CB) radios, walkie-talkies, fire and police radios, cellular phones, lap-top computers, two-way radios, and commercial radio and television broadcast antennas.
PLEASE USE CAUTION in the presence of these devices.

EMI can cause your chair, without warning, to:

- Release its brakes
- Move by itself
- Move in unintended directions

If any of these occur, it could result in severe injury to you or others. EMI can damage the control system of your chair.
There is no way to know the effect on EMI if you add accessories or modify this chair. Any change to your chair may increase the risk of EMI. Parts from other suppliers have unknown EMI properties.

The wheelchair might disturb the operation of devices in its environment that emit electromagnetic fields

TEMPERATURE

The temperature of some surfaces may increase when the chair is exposed to external heat sources as sunlight.

Do not install, maintain or operate your wheelchair without reading all warnings and this entire user's manual.

Always keep this manual in connection with your wheelchair.

NOTICE TO RIDER—WARNING

Do not use your wheelchair on stairs or escalators. Do not lift or move the wheelchair by any of its removable parts.
The wheelchair should be turned off prior to entering or exiting the wheelchair
The wheelchair may come to a sudden stop at any time during operation.
Do not operate the wheelchair if it is behaving abnormally or erratically.
Do not operate the wheelchair with low batteries, to minimize risk of becoming stranded.
Don't use the wheelchair if your weight exceed the maximum user weight written in the specification of this user manual.
Do not carry passengers on the wheelchair independently of the age of the passenger

PINCH HAZARDS – WARNING

Make sure your feet do not "hang up" or get caught in the space between the footrests. In general, make sure you have proper space in areas you will travel through to minimize pinching or entrapment of body parts.
Do not use an escalator to move the wheelchair between floors. Serious bodily injury may occur.
Do not lean over the top of the back upholstery to reach objects from behind as this may cause the wheelchair to tip over.
Do not shift your weight or sitting position toward the direction you are reaching as the wheelchair may tip over backwards or sideways
Do not tip or wheel the wheelchair with wheel locks. Wheel locks are not brakes.
Do not stand on the frame of the wheelchair.
Always use caution when transferring in or out of the wheelchair. Every precaution should be taken to reduce the transfer distance. Also be certain the wheel locks are engaged to prevent the wheels from moving.

Caution—Obstacles

Riding over curbs or obstacles can cause tipping and serious bodily harm. If you have any doubt that you can safely cross any curb or obstacle, ALWAYS ASK FOR HELP. Be aware of your riding skills and personal limitations. Develop new driving skills only with the help of a companion.

Caution—Anti-Tippers

Using anti-tippers substantially reduces your risk of falling over backwards, which can cause serious injury. The Anti-Tippers will keep you from falling over, but they will limit your ability to be pulled up curbs and some other maneuvers. IT IS NOT POSSIBLE TO HAVE THIS WHEELCHAIR WITHOUT ANTI TIPPERS.

The wheelchair is not designed for weight training and is unsafe for use as a seat while weight training. Weight training from the wheelchair substantially changes the stability of the chair and cause tipping.

<u>The wheelchair is not intended to be dismantled. There is no parts of the wheelchair expected to be handled during normal use of it.</u>

LIGHTS

It is recommended to not use the wheelchair near public way without lights turned on.

2.2 Checks to be made on delivery

- Check for the integrity of the original packaging.
- Check for any anomalies on the shipping documents.
- Check for the functionality and integrity of the device in all its parts, at the time of delivery or immediately thereafter, to ensure that no damage has resulted from a careless transport.
- Make sure the surface of the device is not damaged, scratched, bent, etc.
- Any fault or damage found must be immediately reported on the shipping documents and promptly communicated to the carrier. For any other questions, please contact the manufacturer.

2.3 Unpacking

Be sure to put the package of the EVO3 on a stable and secure surface and remove straps with scissors. Pull away the box as shown in Figure 1.

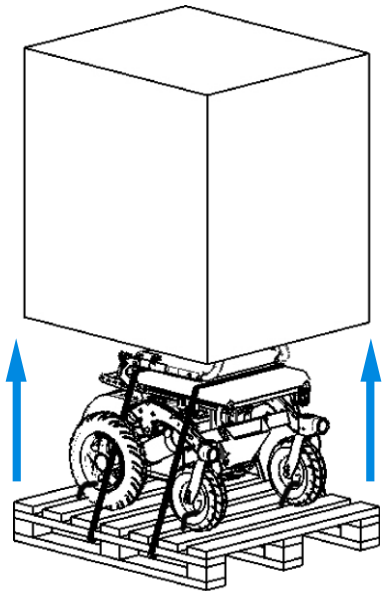


Figure 1

Inside the box there is:

- **EVO3** wheelchair
- N. 1 Charger
- Documentation and manuals

2.3.1 Remove the EVO3 from the pallet

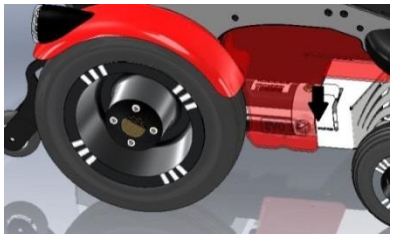


Figure 2

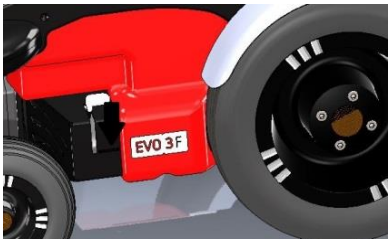


Figure 3

Unlock the engine with the lever on the left and right side as shown in Figure 2 and Figure 3 and slide gently down the EVO3 from the pallet.
After positioning the EVO3 in a safe place, return the lever to its original position.

PACKAGING DIASPOSAL
To properly recycle the packaging materials follow the instructions provided by your local waste disposal service.

2.4 Assembly operation

Mount the backrest on the wheelchair as it is described in section 2.6 - ADJUSTMENTS.

2.5 Transport and storage

If you do not use your EVO3 for a long time make sure that you set the switch OFF as shown in Figure 4. You should keep the EVO3 in a place free from dust and moisture and away from heat sources. If you need to transport the EVO3, turn off the switch.
For the transport be sure that the vehicle is approved for this purpose and set the brake release levers in right position (UP, brakes engaged)
The wheelchair isn't intended to be dismantled for storage or transport.

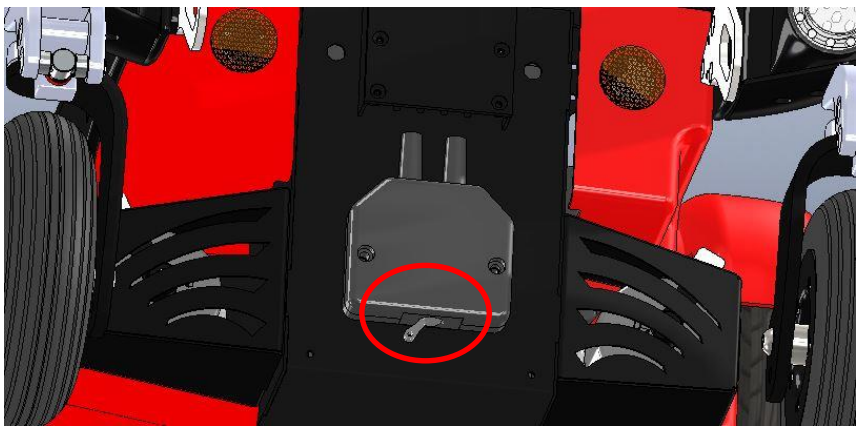


Figure 4

2.6 ADJUSTMENTS

EVO 3 wheelchair has the possibility of many adjustments to best suit the specific user.
To perform these adjustments they are required a 4 mm allen wrench, a 5 mm allen wrench and a 8 mm open-end wrench.
These adjustments can be made by the vendor or by an assistant of the user.

2.6.1 Armrests

The available adjustment are in height and angle; these need to be made on the same order as they are presented.
For the armrest height loosen the four bolts shown in Figure 5 and adjust the height with the single bolt located upon the support shown in Figure 6. For this operation use the 5 mm allen wrench

Figure 5

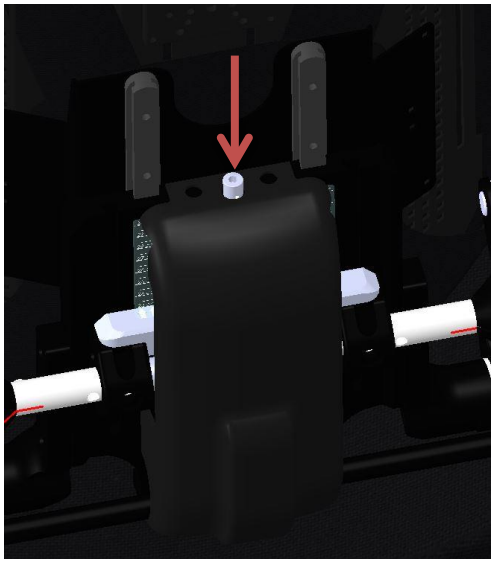


Figure 6

For the armrest angle, you can decide to adjust the horizontal and vertical angle.

For the horizontal angle, lift the armrest that you want to modify and unscrew the bolt indicated in Figure 7; after this you can set the right armrest angle, screwing the bolt to fixing the correct angle. For this operation use the 4 mm allen wrench

Figure 7

For the vertical angle rotate clockwise the screw shown in Figure 8 to lower the armrest, rotate counterclockwise the screw to let up the armrest.

Figure 8

2.6.2 Legrest

Height

To adjust the legrest height, remove the cover (Figure 9) and loosen the bolts shown in Figure 10 with the 4 mm allen wrench;

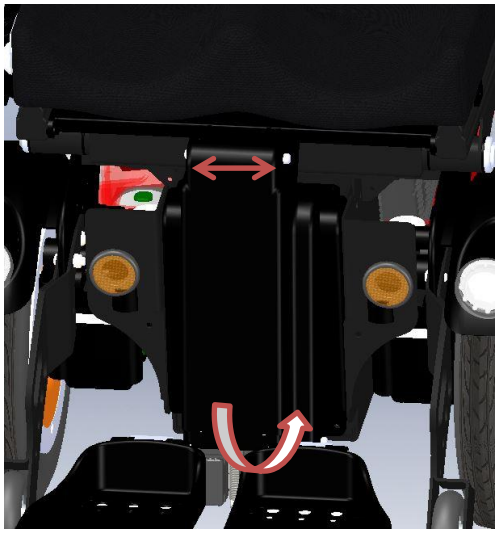


Figure 9

Figure 10

It is possible to adjust separately the height of right and left footrest.
After loosen the bolts you can adjust the height of footrest, moving it up or down.
To move it down it is required to push it towards the chassis and that push it down as it is shown in the Figure 11.
After this adjustment you have to screw again the bolts loosen to fix the legrest position.

Figure 11

Footrest width and angle

You can adjust separately right and left paddle.
Loosening two bolts for one paddle as shown in Figure 12 (with the 4 mm allen wrench) you can move it in the chosen position as shown in Figure 13.

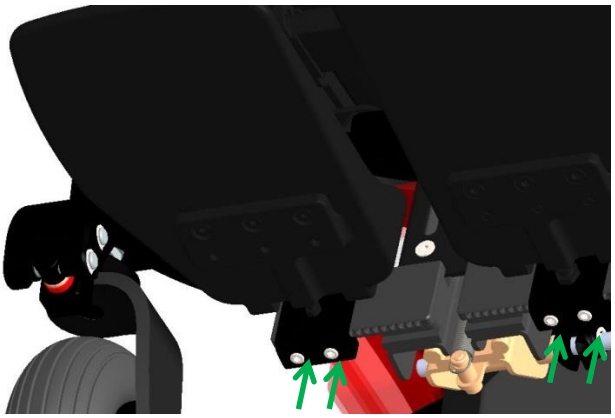


Figure 12

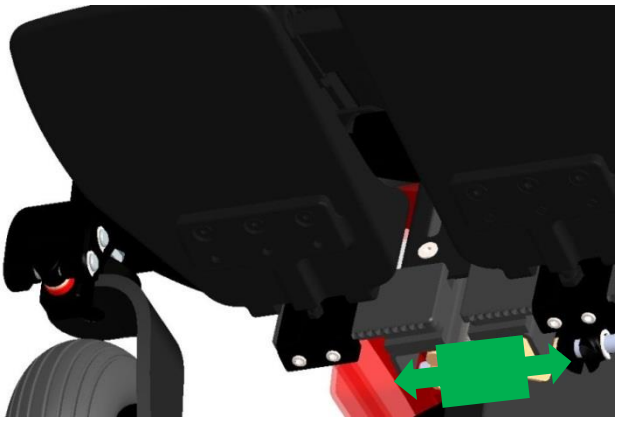


Figure 13

Loosening the bolt shown in Figure 14 (with the 4 mm allen wrench), under the paddle, it is possible to modify the angle of paddle.

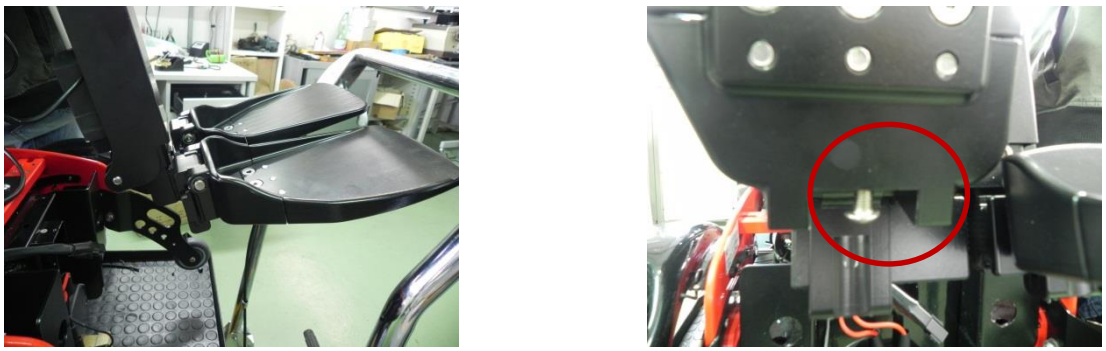


Figure 14

2.6.3 Backrest

To perform the adjustment of the backrest for different type of height, you have to screw off the nuts positioned over the four different bolts as it is possible to see in Figure 15.
To screw off the nuts, it is necessary an 8 mm open-end wrench.

Figure 15

After screwed off the nuts it is possible to adjust the height. To facilitate the mounting of the backrest up the support it may be useful to remove the upholstery of the backrest.

2.6.4 Seat depth

To adjust the seat depth, loosen the 6 bolts on the right side and the 3 bolts on the left side of the seat, as it is shown in Figure 16.

Figure 16

In this way one can move forward and backward the seat. When the chosen position is reached it is necessary to screw again the bolts.

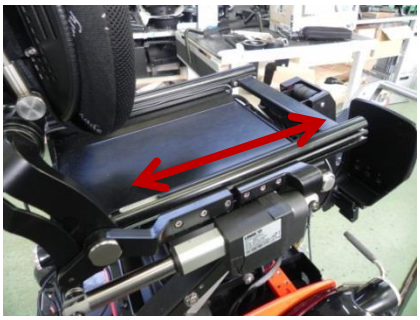


Figure 17

2.6.5 Drive profile

As default in the wheelchair they are saved some different drive profile for the use indoor and outdoor.
Additional profiles should be the result of customization for the individual user.
Use the button “PROFILE” of the joystick to change different types of profiles: they are sorted from the more indoor one to the more outdoor one.
For each profiles it is possible to change the speed.

INDOOR PROFILES

When this profile is activated most of the parameters of the wheelchair are cut off. For example the maximum speed and the acceleration are limited.
In this way the handling is really improved and there is more margin for mistake on the lever of the joystick.
In this way it is comfortable to use the wheelchair in indoor environments.

OUTDOOR PROFILES

When this profile is activated most of the parameters of the wheelchair are at the maximum value. For example the maximum speed and the acceleration are not limited.
In this way it is comfortable to use the wheelchair in outdoor environments.

However remember that the wheelchair EVO3 was designed for use mostly in indoor environments.

2.7 USE OF THE WHEELCHAIR

2.7.1 Rnet control console

The user interface is a joystick with a lever, buttons and a display.

Figure 18

For the use of joystick please refer to the following instructions.

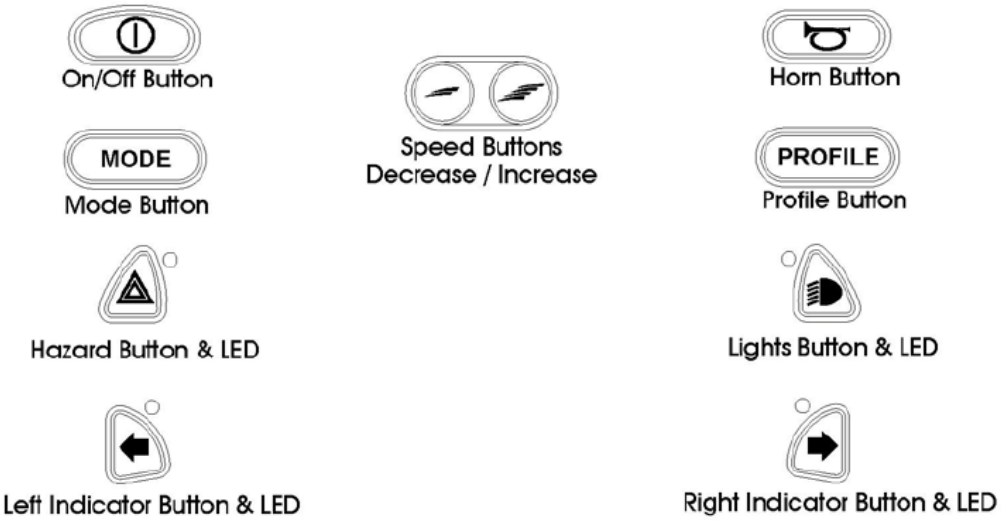


Figure 19

On-Off Button	This button turns on and off the wheelchair. Don't use this button to stop the wheelchair unless it is an emergency.
Horn Button	When this button is pressed the horn will sound
Mode Button	This button allow the user to navigate through the available function of the wheelchair (drive, actuators, preloaded movements)
Profile Button	This button allow the user to navigate through the available driving profiles for the wheelchair
Speed Buttons	These buttons decrease/increase the maximum speed setting
Hazard Button + Led	This button activates and deactivates the wheelchair's hazard lights. When activated the Led will flash.
Lights Button + Led	This button activates and deactivates the wheelchair's lights. When activated the Led will illuminate
Left-Right Indicator Button + Led	These buttons activates and deactivates the wheelchair's indicators. When activated the Led will flash

Use the controller of the joystick to get in gear. Its proportional functionality allows you to adjust speed and direction according to the intensity with which you act on the controller.
Releasing the lever of the controller automatically activates the electromagnetic brake that locks the wheels of the EVO3.

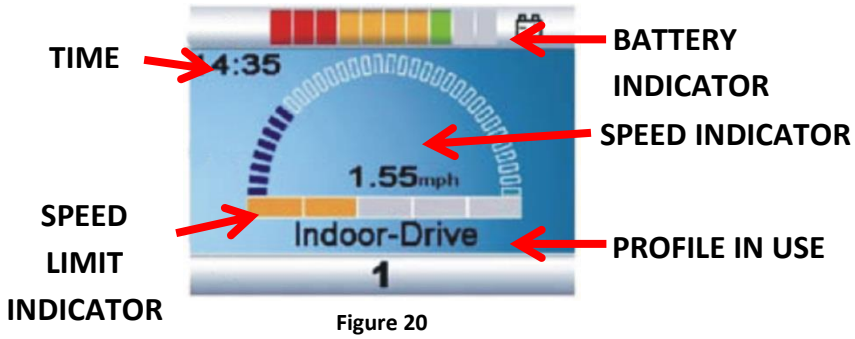


Figure 20

The installation menu allows the user to access a range of setting:

Set Time	A right joystick inclination will enter the menu for the clock adjustment
Display Time	Left and right the joystick to change between 12h, 24h, off
Distance	You can enter a screen where you can see the total distance driven using the wheelchair, the distance driven from last reset and you can reset this distance
Backlight	You can adjust the intensity of the LCD screen from 0 to 100 % in step of 10%
Background	You can choose the color of the background of the LCD screen between blue and white.
Exit	Exit this menu

2.7.2 Using the wheelchair

Do not drive your wheelchair for the first time without the presence of an assistant near to you. At the beginning always use the INDOOR profile. Do not let children use the wheelchair without supervision. Do not drive your wheelchair under the influence of alcohol.
Some pathologies may limit your ability to drive your wheelchair safely. Be sure to consult with a doctor about your physical limitations. Avoid sudden stops or starts. To stop the wheelchair use the lever of the joystick and don't suddenly turn off the joystick.
Don't turn the wheelchair at high speed.
When driving downhill, select the slowest speed.
When driving uphill, try to keep moving at a stable speed.
Anyway avoid driving on ramps without any edge protection.
Do not drive up or down slopes with a slope greater than one indicated in the technical specifications of this manual.
Center of balance of the wheelchair and so its stability cab be affected by:

- Lifting of the seat
- User position
- Us of a backpack
- Tilting of the seat

WARNING

If your wheelchair begins to behave in an unexpected manner, immediately release the joystick to stop the wheelchair and turn it off.

DEFAULT POSITION

Default position mean a safe position for the seat system of the wheelchair:

- Height of the seat = 0 cm
- Angle of seat = 0°
- Angle of legrest = 90°
- Angle of backrest = 90°

Obstacle climbing

When facing with an obstacle it is recommended to set the position of the seat in the "default position".

In order to riding over higher obstacles it is strongly recommended to take a run up of almost 500 mm when facing the obstacle first with castors.

Dealing with uphill

When facing an uphill road it is recommended to set the position of the seat in the "default position".

In order to best come over an uphill it is strongly recommended to use an outdoor profile at maximum speed with the wheelchair facing forward.

WARNING

Stopping and starting the chair while moving up an incline makes the wheelchair more difficult to control

Dealing with downhill

When facing a downhill road it is recommended to set the position of the seat in the "default position".

In order to best come over a downhill it is strongly recommended to use an indoor profile at minimum speed with the wheelchair facing forward.

WARNING

Don't drive up or down slopes with a gradient than indicated in section 6.

WARNING

Don't drive up or down ramps that are not equipped with proper edge protection to prevent the wheelchair from falling down

WARNING

Don't drive down or up a hazardous incline if the surface is covered with snow, ice or the surface is uneven.

Driving on side slopes

When facing with side slopes, always drive the wheelchair with great caution and at minimum speed

Turning with the wheelchair

Don’t turn with the wheelchair at high speed.

Driving in dark environments

Driving in dark environments can only be done if the wheelchair has functioning lights

DRIVE WITH SEAT SYSTEM NOT IN DEFAULT POSITION

Operating seat lift, tilt, backrest recline and legrest elevation may change the center of gravity and increase the risk of tipping over.

Always drive in low speed and only use these functions on level surface.

Safety belt

Evo3 wheelchair has the predisposition for a pelvic belt, that can be purchased as an accessory.
Pelvic belt is only designed to position the user and not for any protection in case of accident

Transfer into and out the wheelchair

Before entering or leaving the wheelchair turn it OFF.
Users transfer is recommended with the assistance of an attendant.
Don’t use the joystick as a handhold or point of support.
Don’t use footrests or armrests as support.

Joystick Error

If the joystick is moved from the central position during or immediately after turning on an error will be displayed, see Figure 21. To enable the wheelchair to drive again set the joystick in the central position and reboot the wheelchair.

Figure 21

2.7.3 Manual brake release lever

In case of necessity it is possible to manually move the wheelchair.
First of all you have to turn off the wheelchair acting on the specific button of the joystick.
Then you can act on the release lever shown in Figure 22 and Figure 23.
When the brakes are released, it is not be possible to drive the wheelchair.

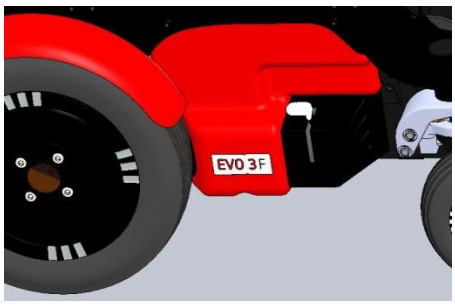


Figure 22

Figure 23

WARNING

When the brakes are released never use the wheelchair on a slope or a wet surface.

Don’t operate the brake release without the presence of an assistant

2.7.4 Powered function

Depending on the configuration of your own EVO3 some of this function should be not available or different.

WARNING

Operating these functions changes the center of gravity and increases the risk of tipping over.
Always drive in low speed and only use these functions on horizontal plane.

Seat lift

Figure 24

A maximum lift of 30 cm allows the user to have more independence.

Seat tilt

Figure 25

Adjusting the tilt of the wheelchair (45°) causes a better distribution of pressure on the body of the user.
This helps to reduce the incidence of all problems due to punctual localization of loads.

Moreover tilting helps you to avoid retention of fluids in the lower leg, make it easier to sit on the wheelchair.

As a consequence even legrest will be raised while tilting, so you can better pass some obstacles.

Backrest biomechanical recline

Figure 26

Powered reclining of the backrest (range 90°-170°) helps to improve the posture. It is also useful to facilitate personal care. To best fit physiological movement as the backrest recline, it also slides down. The point of rotation of the backrest can't coincide with the human's anatomical point of rotation of the back. The biomechanical reclining is the best way to solve this and make the backrest and the headrest to remain in the same position in relation to the back.

Legrest biomechanical elevation

Figure 27

A central mounted legrest takes up less space than separated legrest making it easier to move with the wheelchair.

In this way even lateral transfer will be easier.

The knee that is the point of rotation of the lower leg can't coincide with the point of rotation for the elevation of the footrest.

EVO3 legrest has an innovative way to compensate this and assure that the knee and the thighs remain firmly on the wheelchair.

2.7.5 Battery charging

To recharge the batteries use only the provided charger or one recommended by Neatech.it. The manufacturer is not responsible for damage to person or property resulting from the use of non-original product.
For a list of recommended charger please contact your vendor.

- Connect the power cord to a power supply 230 V.

- Connect the cable to the joystick as shown in Figure 28 and Figure 29.

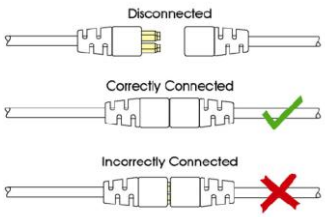


Figure 28

Figure 29

- When batteries are loaded unplug the power cord and the battery cable.

	Battery charging should be done in well ventilated environments. Never charge in bathroom or wet room. **When the charger is connected it is not possible to drive the wheelchair**

Each battery is subject to a normal “self-discharge”, so batteries that are not used for long time will discharge by itself.

Charging time is influenced by multiple factors such as remaining battery power, battery state of aging and temperature. However the approximate charging time is about 7-9 hours. If the charge duration was reduced (about 1 hour), that is a sign of failure: contact the vendor for a possible replacement of batteries.

Don’t use the wheelchair during the charge.

SHOCK HAZARD

Check if charger data sheet matches with the network power (voltage, frequency). Only use the charger supplied with the wheelchair.

RELEASE DANGER

Any impact to the batteries could cause a loss of fluids. Pay attention

ENVIRONMENTAL HAZARD

It is recommended to properly recycle used batteries. Contact your local agency for waste disposal for more information.

2.7.6 Use as seat in motor vehicle

Hooks for local travel (four-point tie-down)

The wheelchair was tested when used as a front-facing seat in a motor vehicle, meeting the requirements of ISO 7176-19

	The way of access to the motor vehicle and handling within it is influenced by the size of the wheelchair.

For a safe use of the wheelchair as a seat in a motor vehicle please follow this instructions:
It is recommended to use the pelvic seat belt along the front of the pelvic area, so that the angle of the belt is between 30° and 75° from the horizontal, as shown in Figure 30; a greater angle, always in the expected range, is preferable.

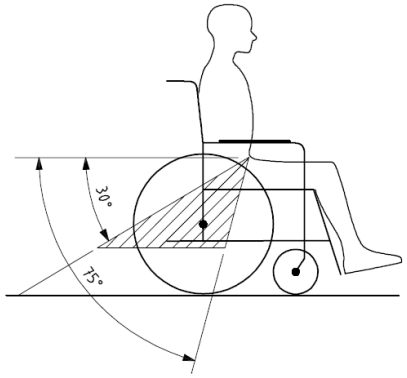


Figure 30

You should keep your seat belts as tight as possible to the body, but without affecting the comfort
Make sure that the belts are not twisted during use.
It is recommended to use both the pelvic belt and the shoulder belt to reduce the possibility of impact of the head and chest with vehicle components.

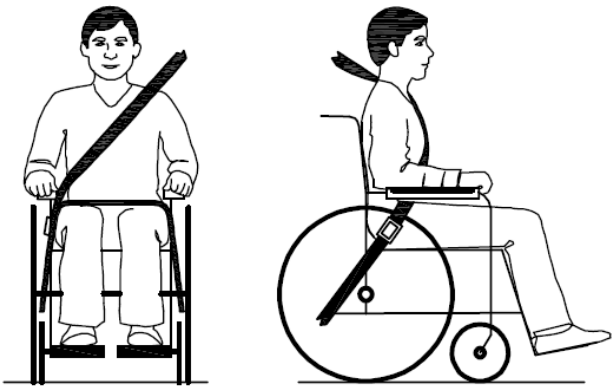


Figure 31

Remove and assure inside the vehicle any accessory from the wheelchair in order to reduce the potential risk of injury.
If the wheelchair has been involved in some type of collision between vehicles, it must be tested by the manufacturer before re-use.
Don’t make any alteration or tampering on point of safety or structural parts.

Use extreme care when positioning the wheelchair, so that the release button of the seat belt can not be pressed by its components in case of impact.
The hooks that can be used with the wheelchair are “Four-Point Tie-Down” type. The wheelchair will be hooked up inside the motor vehicle in 4 points: 2 front and 2 rear, as shown in Figure 32.

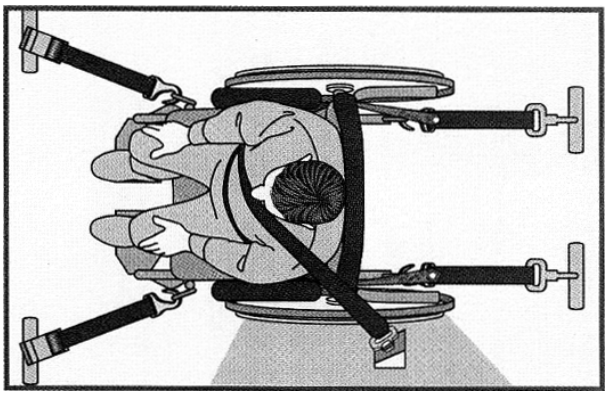


Figure 32

Don’t use any postural support in a motor vehicle unless they are conform to ISO 7176-19.

2.8 MAINTENANCE

Regular maintenance help to preserve functionality and safety of the Evo3. The lack or inadequacy of care and maintenance implies a limitation of the warranty from the manufacturer.

To clean the chair don't use any device to spray water at high pressure and in any case protect the control device from water and humidity. For plastic or metal parts use a soft cloth moistened with a non-aggressive detergent. For pads, linings and covers of the seat and backrest use warm water and mild detergent.

Do not use chemical cleaners, solvents, acids, etc.

Tires can be cleaned with water and detergent.

CAUTION

All interventions in the wheelchair's systems must be performed by an authorized service center

SHOCK HAZARD

The main switch must always be switched off when batteries are replaced or you are doing any maintenance of the wheelchair. Always turn off the joystick before interrupting the power with the main switch.

2.8.1 Tire puncture

In case of tire puncture please see following instruction:

CASTERS PUNCTURE

Disassemble the punctured caster unscrewing the bolt shown in Figure 33 by locking the nut (1) with an open-end wrench of 13 mm and unscrew the bolt (2) with an allen wrench of 6 mm.

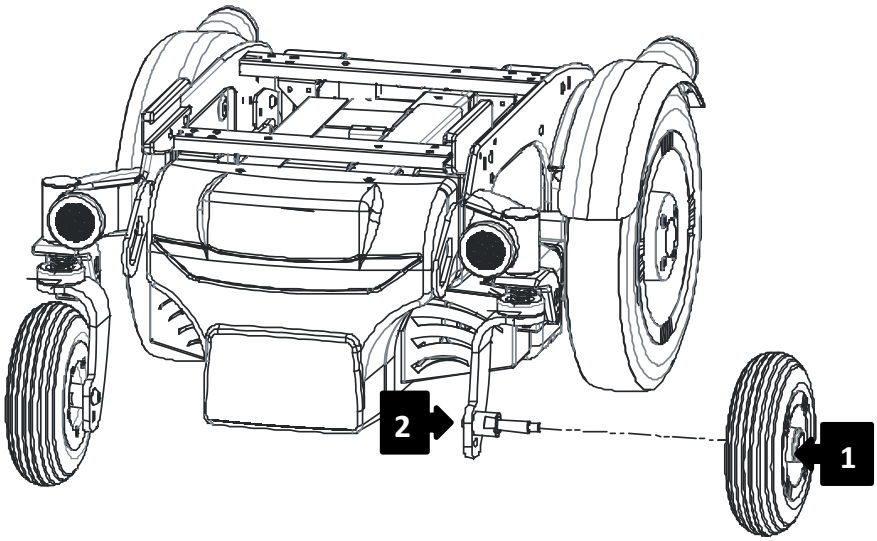


Figure 33

Contact an authorized service center to repair the punctured wheel.

TRACTION WHEELS PUNCTURE

Disassemble the punctured wheel unscrewing the four bolts indicated in Figure 34.

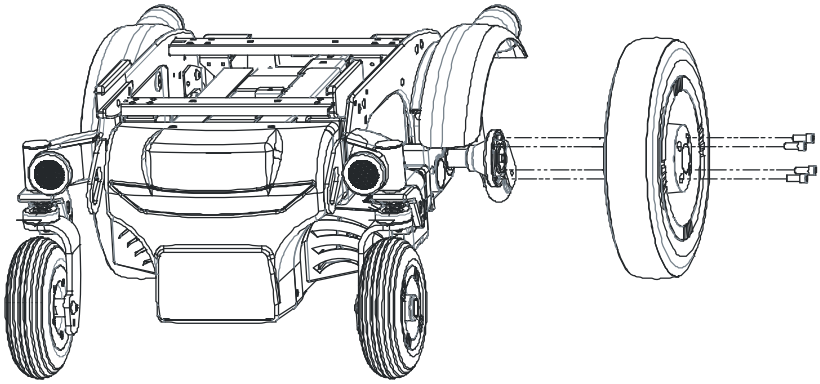


Figure 34

Pay attention when unscrewing the bolts and pulling away the wheel because in case of incorrect procedure it is possible to damage the hub motor.

Contact an authorized service center to repair the punctured wheel.

2.8.2 Checks to be made on the wheelchair

CHECK	PERIOD	NOTE
Battery charge level	Before each utilize	Check the battery charge level on the indicator located on the joystick. (see Figure 20)
Electric cables obstacle	Before each utilize	Check that the wires do not interface with the movements of the wheelchair.
Tightening of removable parts	Before each utilize	Ensure all removable parts are securely locked in place.
Tire pressure	Weekly	Verify that the tire pressure is consistent with the given values: **DRIVE WHEELS: 280 kPa** **CASTOR WHEELS: 250 kPA** **Overfilling can cause a risk of explosion**
Lights check	Weekly	Verify that all lights and indicators work properly and are clean. **This point can apply only if you have lights on your wheelchair**
Cleaning of wheelchair	Monty	Clean the wheelchair and the upholstery according to the instructions of this manual
Brake release lever check	Monty	Check that the brake release is working properly
Tire usury	Monty	Check for the tire usury and if necessary contact your vendor for the replacement
Checking tightness of chassis screws	Annual	For this operation please contact an authorized service center

2.8.3 Troubleshooting

EVENT	POSSIBLE CAUSE	REMEDY
The wheelchair can not be started	Batteries discharged	Charge the batteries
	Joystick cable not connected or badly connected	Properly insert the joystick cable
	Main switch is set to OFF	Turn the main switch to ON. If the problem continues, it means that there are some electric problems. Please don't use your wheelchair and contact an authorized service center
The wheelchair is turned on but the chair does not drive	Batteries in charging	Wait that the batteries are completed charged
	Brake release lever in wrong position	Set properly the brake release lever as it is shown in section 2.7.3
The wheelchair stops while driving	Magneto – hydraulic protection switch has triggered	Turn the main switch to ON. If the problem continues, it means that there are some electric problems. Please don't use your wheelchair and contact a qualified technician
	Joystick cable not connected or badly connected	Properly insert the joystick cable
The wheelchair can only be driven at low speed	Seat lift is too high or anyway the position of the seat is such that the speed need to be limited for safety reasons	Adjust the position of the seat
Wheelchair makes noise	Release lever not properly inserted	Insert the release lever correctly as it is shown in section 2.7.3
Tire puncture	Tire puncture	See section 2.8.1
Problems with the seat system	Broken actuator or software fault	Contact an authorized service center

Rnet system fault

When the control system is triggered and the wheelchair can't be used, a diagnostic screen is displayed in the display of the joystick.

First switch off the wheelchair and leave it off for some minutes. Then reboot the wheelchair. If the fault still continues, contact an authorized service center.

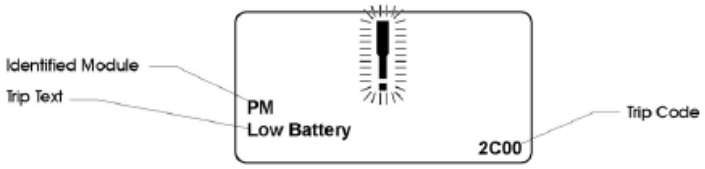


Figure 35

Seeing Figure 35:

- Identified Module indicates the module that had the problem
  For example:
  PM Power Module
  JSM Joystick
  ISM Light Module
  CxSM Seating Module
- The Trip Text is a brief description of the problem
- The Trip Code is a four digit code that allow an authorized service center to identify the problem

For any other need, please contact the manufacturer.

2.9 Spare part list

Code	Description	Type of service	Note
R042-001	Antitip castor	A	
R042-002	Backrest actuator	B	
R042-003	Legrest actuator	B	
R042-004	Front cover	A	
R042-005	Rh cover	B	
R042-006	Lh cover	B	
R042-007	Back cover	A	
R042-008	Legrest cover	A	
R042-009	Backrest cover	A	
R042-010	Traction wheel	B	
R042-011	Tire of traction wheel (with tube)	A	
R042-012	Castor wheel	B	
R042-013	Tire of castor wheel (with tube)	A	
R042-014	Rh motor	B	
R042-015	Lh motor	B	
R042-016	Armrest pad	A	
R042-017	Rh armrest (with bracket)	B	
R042-018	Lh armrest (with bracket)	B	
R042-019	Battery set	B	
R042-020	Charger	A	
R042-021	Light on traction wheel	B	
R042-022	Light on castor wheels	B	
R042-023	Joystick	A	
R042-024	Rh joystick support	B	
R042-025	Lh joystick support	B	
R042-026	Power module	B	
R042-027	Light module	B	
R042-028	Seating module	B	
R042-029	Advanced seating module	B	
R042-030	Footplate	B	
R042-031	Complete legrest	B	
R042-032	Legrest belt	B	
R042-033	Rnet cable 2.5 m	B	
R042-034	Rnet cable 1.5 m	B	
R042-035	Rnet cable 0.5 m	B	
R042-036	Rnet cable 1.0 m	B	
R042-037	Actuator cable	B	
R042-038	Advanced seating module cable	B	
R042-039	Seat cushion	A	Specify the width of the wheelchair
R042-040	Backrest cushion	A	

Type of service	Code
A	Parts that the final user can buy at an authorized service center and substitute by himself.
B	Parts that need the intervention of an authorized service center for the maintenance

Use of unapproved aftermarket accessories and parts may make the wheelchair unstable or uncontrollable

2.10 Instruction for replacing parts

2.10.1 Antitip castor

Unscrew the screw indicated in Figure 36 using a PH2 star head screwdriver positioned from the internal side of the castor. Remove the castor.

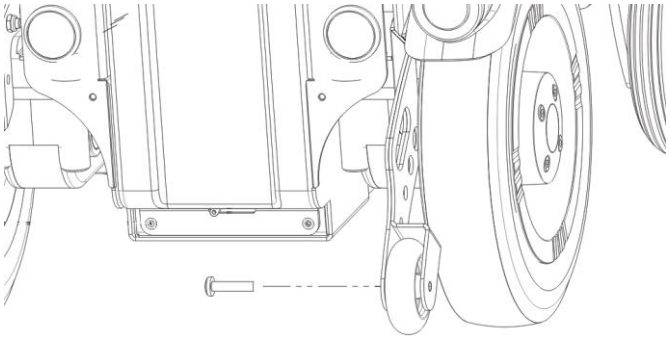


Figure 36

To mount the new part screw again the screw using the same tool still positioned from the internal side of the castor.

2.10.2 Front cover

Unscrew the screws indicated in Figure 37 and remove the cover. For this operation use a 4 mm allen wrench.

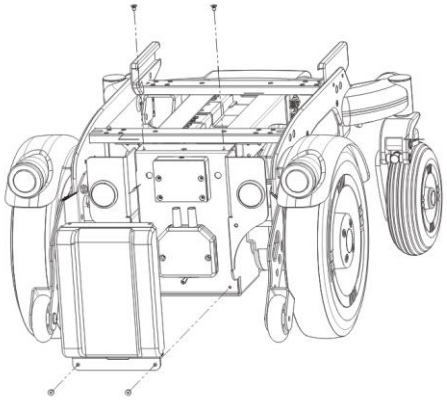


Figure 37

To mount the new part repeat the operations in reverse order.

2.10.3 Back cover

Unscrew the screws indicated in Figure 38 and remove the cover. For this operation use a 3 mm allen wrench.

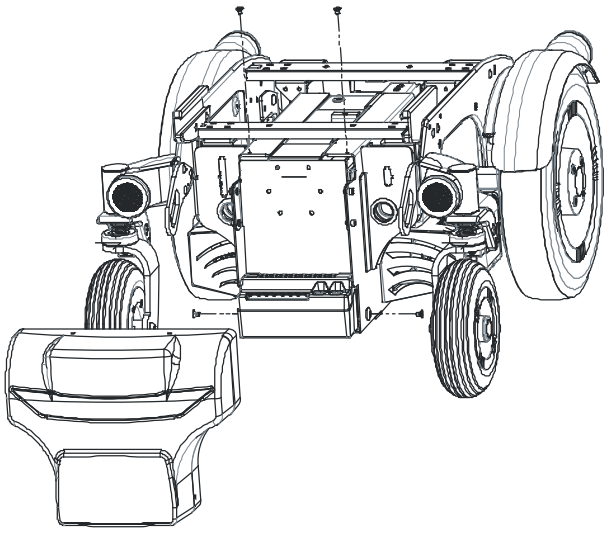


Figure 38

To mount the new part repeat the operations in reverse order.

2.10.4 Legrest cover

Take the two lower side of the legrest cover and pull them out. Then you have to take two higher side of the cover and pull them out. In this way you are able to take away the legrest cover

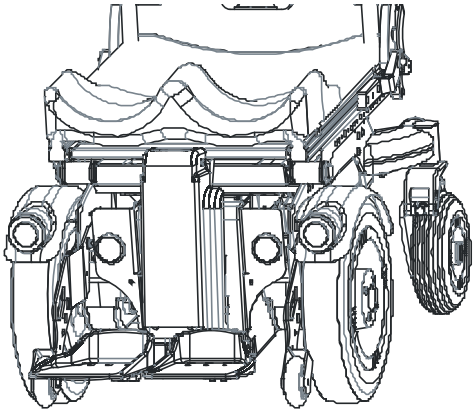


Figure 39

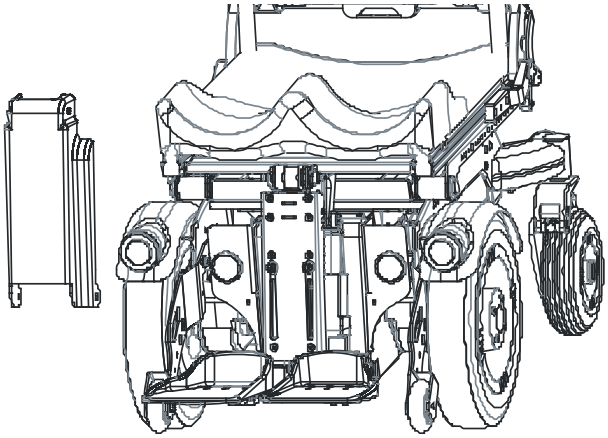


Figure 40

To mount the new part repeat the operations in reverse order.

2.10.5 Backrest cover

Remove the backrest cover first removing the lower part and then pulling it upward.

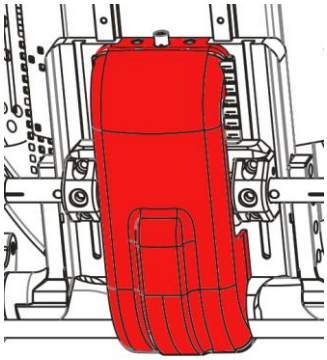


Figure 41

To mount the new part repeat the operations in reverse order.

2.10.6 Tire of traction (with tube)

Remove the screws (1) shown in Figure 42 and remove the wheel of traction. Then remove the screws (2) indicated in Figure 43 and take away the rim; after that it is possible to remove the tire with its tube.

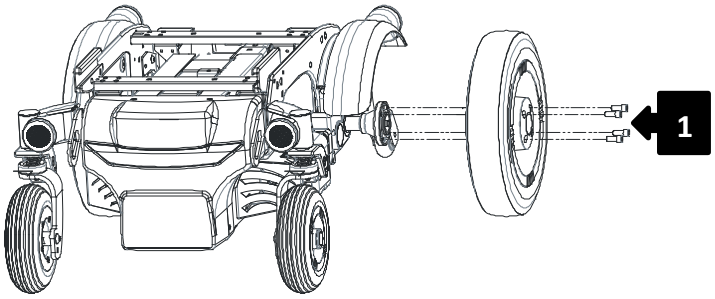


Figure 42

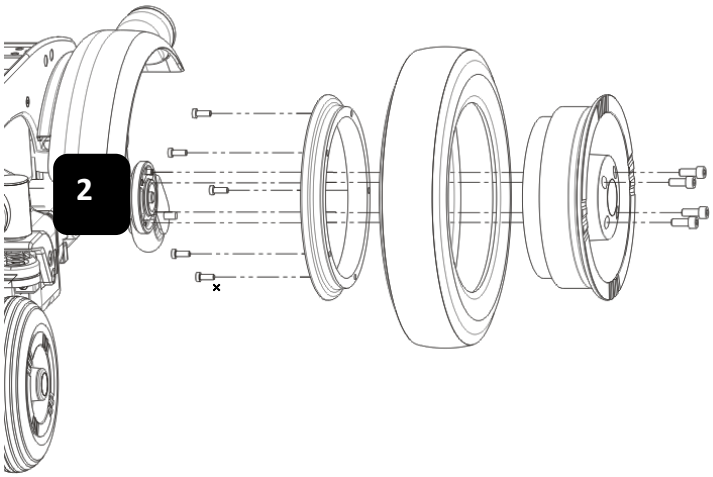


Figure 43

To mount the new part repeat the operations in reverse order.

2.10.7 Tire of castor wheel (with tube)

Disassemble the castor unscrewing the bolt shown in Figure 44 by locking the nut (1) with an open-end wrench of 13 mm and unscrew the bolt (2) with an allen wrench of 6 mm.

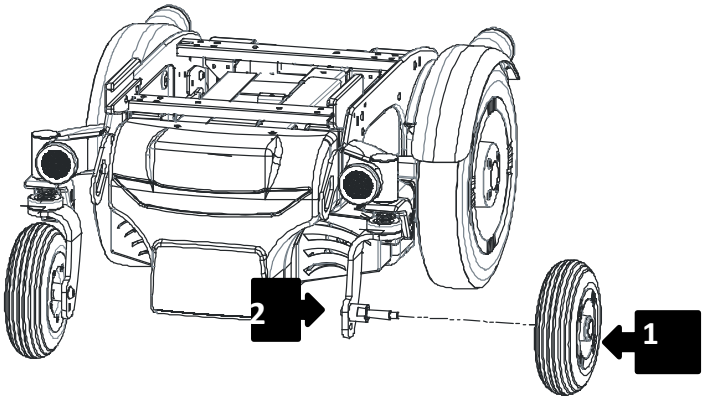


Figure 44

Remove the screws (1) shown in Figure 45 and take away the rim; after that it is possible to remove the tire with its tube.

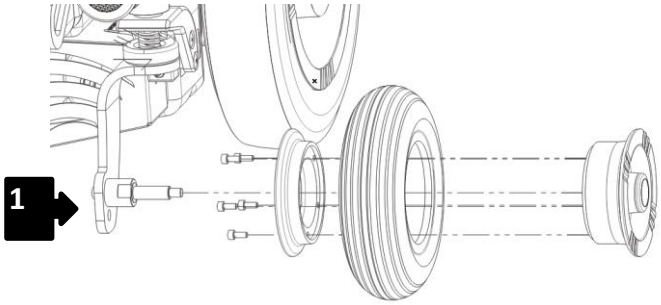


Figure 45

To mount the new part repeat the operations in reverse order.

2.10.8 Armrest pad

Unscrew the screws indicated in Figure 46 and substitute the armrest pad with a 4 mm allen wrench.

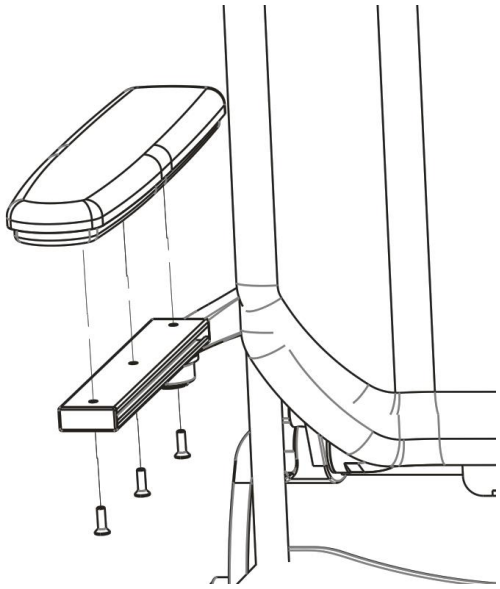


Figure 46

To mount the new part repeat the operations in reverse order.

2.10.9 Joystick

Switch off the wheelchair using the power button on the joystick, see Figure 19. Switch off the main circuit breaker, see section 5.6. Unplug the joystick cable. Unscrew the two screws below the joystick using a 3 mm allen wrench.
Substitute the joystick, screw the two screws and plug the cable again. Ensure that the cable is properly connected.

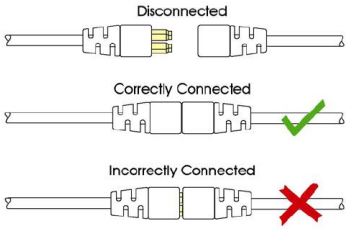


Figure 47

2.10.10 Seat cushion

Remove the seat cushion pulling it up. Place the new cushion on the straps and ensure it is correctly got it right. Specify the width of the wheelchair.

2.10.11 Backrest cushion

Remove the backrest cushion pulling it forward. Place the new cushion on the straps and ensure it is correctly got it right. Specify the width of the wheelchair.

3 Instructions for replacing parts

3.1 Backrest actuator

First assure that the wheelchair is on a level surface and it is at the default position (see section 2.7.2).

	If the wheelchair has any problem at the seating system for which it is not possible to reach the default position, please contact the manufacturer

Remove the plastic cap form the actuator cable and unplug the cable. To remove the backrest actuator remove the parts (1), (2) and (3) shown in Figure 48 in this order and then take away the actuator

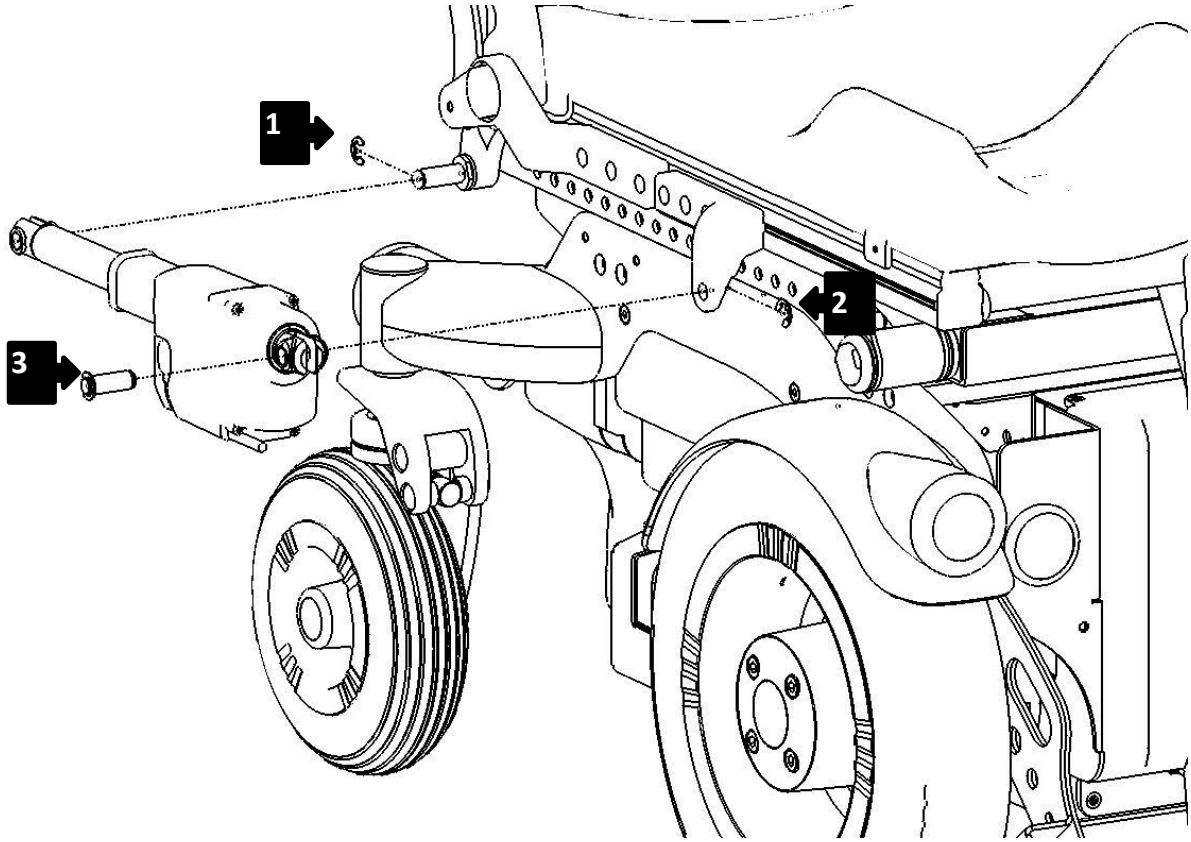


Figure 48

For the replacement use only parts supplied be the manufacturer

Part number	Description
R042-002	Backrest actuator

To mount the new part follow the instruction in reverse order.

3.2 Legrest actuator

First assure that the wheelchair is on a level surface and it is at the default position (see section 2.7.2).

	If the wheelchair has any problem at the seating system for which it is not possible to reach the default position, please contact the manufacturer

Remove the seat cushion. Seeing Figure 49 remove the caps (1) and (2) and unscrew the 4 screws of the legrest beam.
Sent the removed legrest to the manufacturer; it will be repaired and sent back to you.

	Pack the part that need to be substituted or repaired and contact the manufacturer to know the address of shipment. Pay special attention to the packaging in order to avoid any damage during the transport.

Part number	Description
R042-003	Legrest actuator

To mount the new part follow the instruction in reverse order.

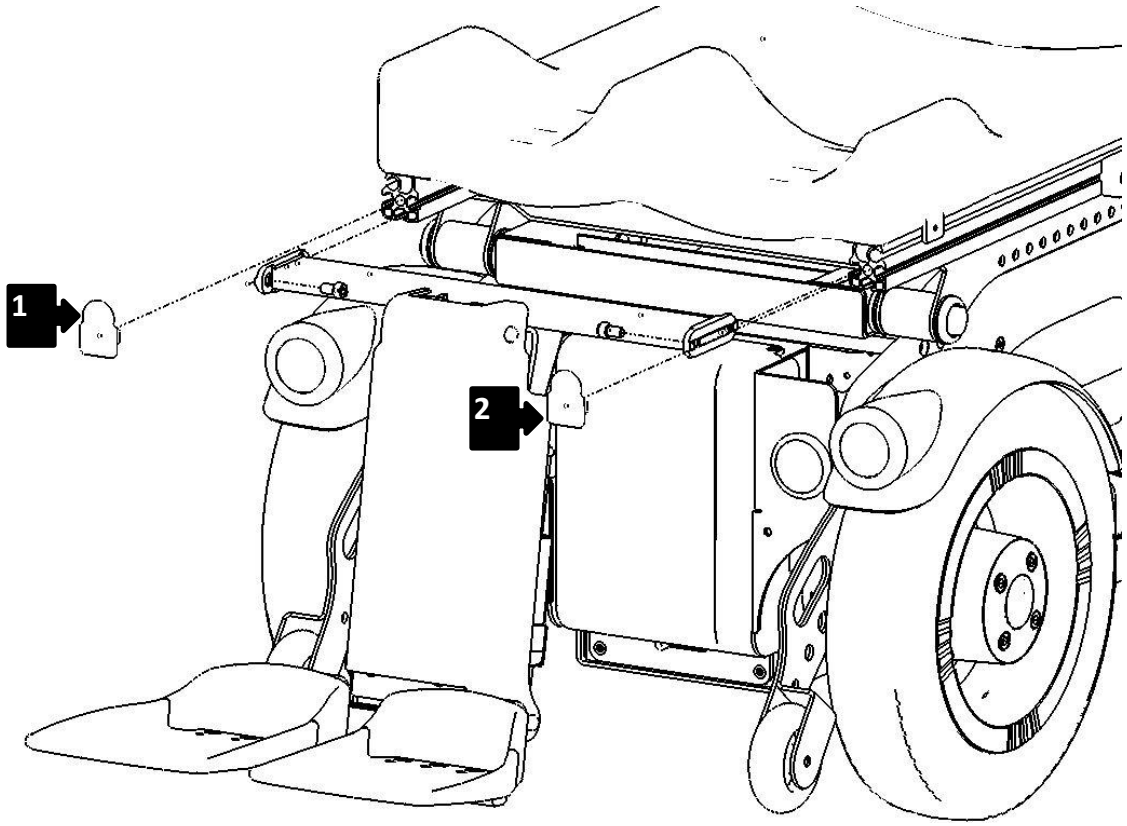


Figure 49

3.3 Lateral cover

First assure that the wheelchair is on a level surface and it is at the default position (see section 2.7.2).

	If the wheelchair has any problem at the seating system for which it is not possible to reach the default position, please contact the manufacturer

First remove the traction wheel: chock up the wheelchair so that the wheel turns freely, unscrew the screw indicated in Figure 50 and remove the wheel.

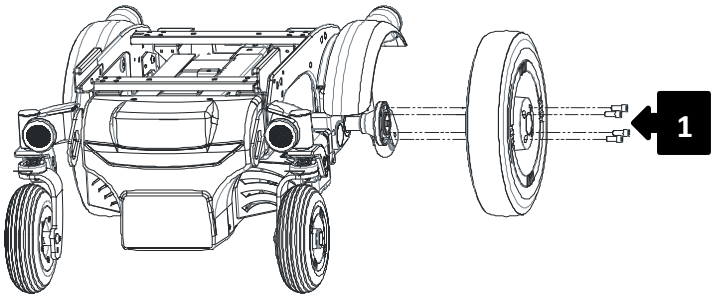


Figure 50

Seeing Figure 51, remove the screws (1), (2) and (3) and remove the lateral cover.

Part number	Description
R042-005	Rh cover
R042-006	Lh cover

To mount the new part follow the instruction in reverse order.

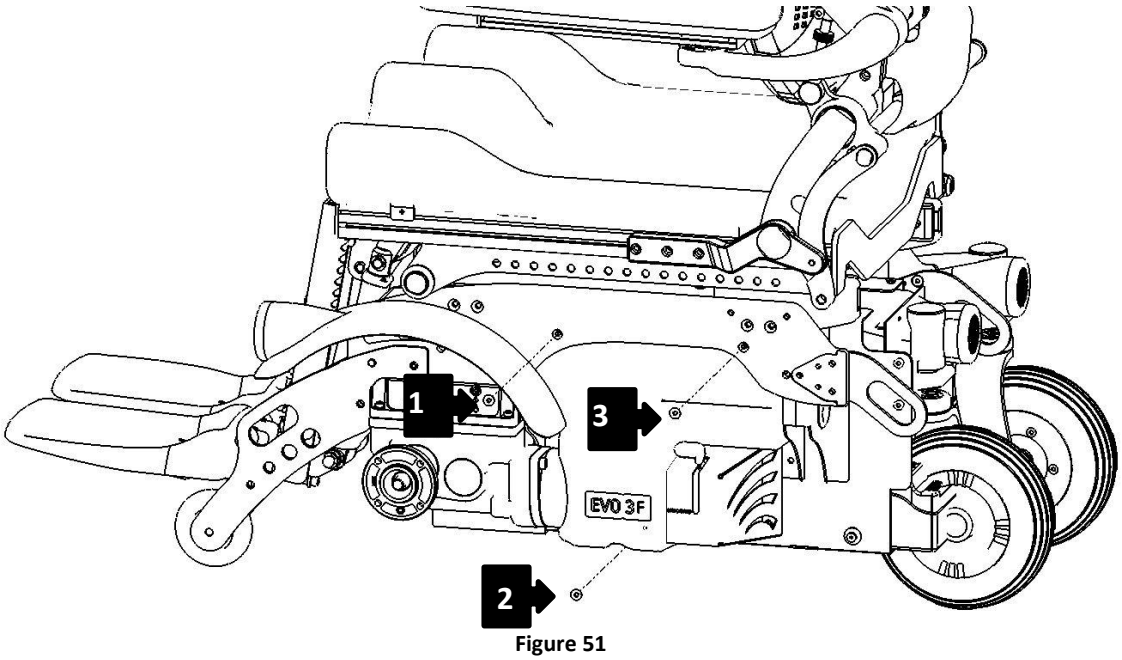


Figure 51

3.4 Traction wheel

First assure that the wheelchair is on a level surface and it is at the default position (see section 2.7.2).

	If the wheelchair has any problem at the seating system for which it is not possible to reach the default position, please contact the manufacturer

Chock up the wheelchair so that the wheel turns freely, unscrew the screw (1) indicated in Figure 52 and remove the wheel.

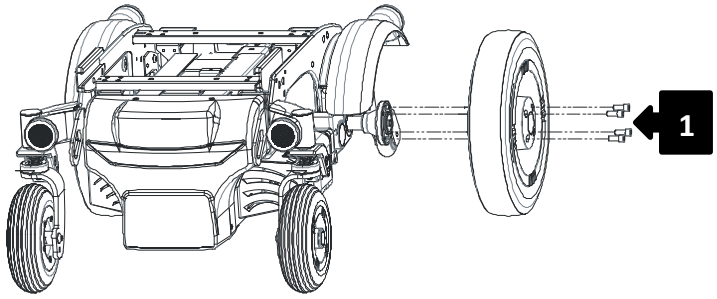


Figure 52

Part number	Description
R042-010	Traction wheel

To mount the new part follow the instruction in reverse order.

3.5 Castor wheel

First assure that the wheelchair is on a level surface and it is at the default position (see section 2.7.2).

	If the wheelchair has any problem at the seating system for which it is not possible to reach the default position, please contact the manufacturer

Chock up the wheelchair so that the wheel turns freely. Seeing Figure 53, lock the nut (1) with an open-end wrench of 13 mm and unscrew the bolt (2) with an allen wrench of 6 mm.

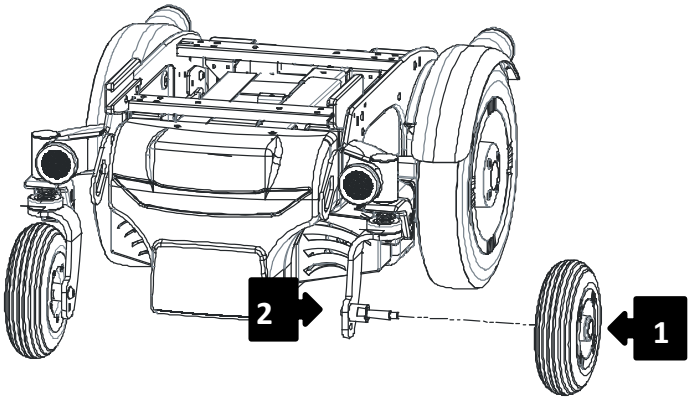


Figure 53

Part number	Description
R042-013	Castor wheel

To mount the new part follow the instruction in reverse order.

3.6 Motor

For the motor substitution it is necessary to send back the wheelchair to the manufacturer.

Part number	Description
R042-014	Rh Motor
R042-015	Lh Motor

First assure that the wheelchair is on a level surface and it is at the default position (see section 2.7.2).
Switch off the wheelchair and turn off the main circuit breaker, see section 5.6.
Pack the wheelchair that need to be repaired and contact the manufacturer to know the address of shipment.
Pay special attention to the packaging in order to avoid any damage during the transport.

If the wheelchair has any problem at the seating system for which it is not possible to reach the default position, please contact the manufacturer

3.7 Armrest

First assure that the wheelchair is on a level surface and it is at the default position (see section 2.7.2).

	If the wheelchair has any problem at the seating system for which it is not possible to reach the default position, please contact the manufacturer

Seeing Figure 54, unscrew the screw (1) and take away the armrest.

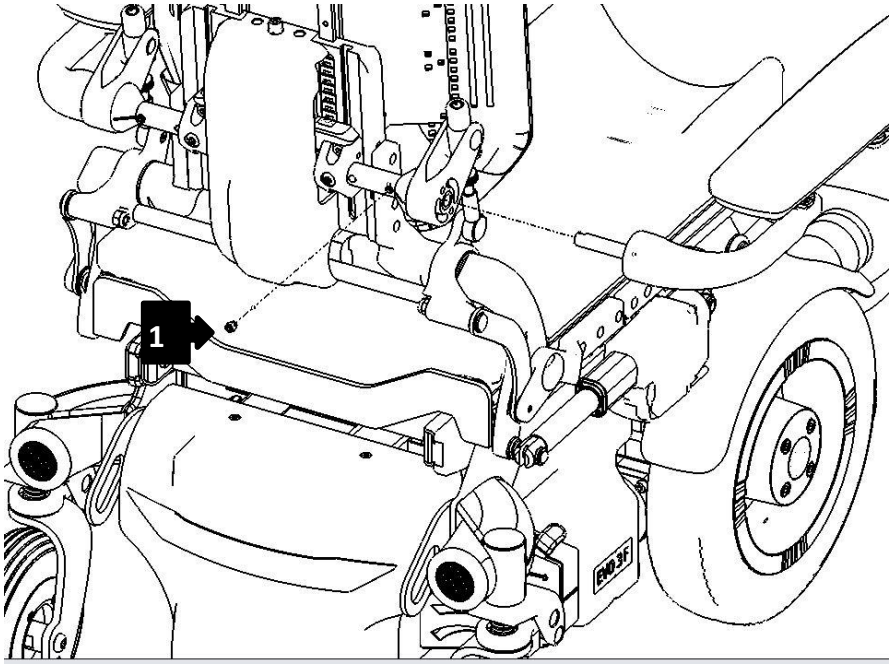


Figure 54

Part number	Description
R042-017	Rh armrest
R042-018	Lh armrest

To mount the new part follow the instruction in reverse order.

3.8 Battery replacement

Ensure that the wheelchair is on a level surface. Raise the legrest till the maximum elevation is reached. Lift the wheelchair at the maximum height.

If the wheelchair has any problem at the seating system for which it is not possible to reach the desired position, please contact the manufacturer

Seeing Figure 55, first switch off the main circuit breaker located under the front cover, then unscrew the screws indicated.

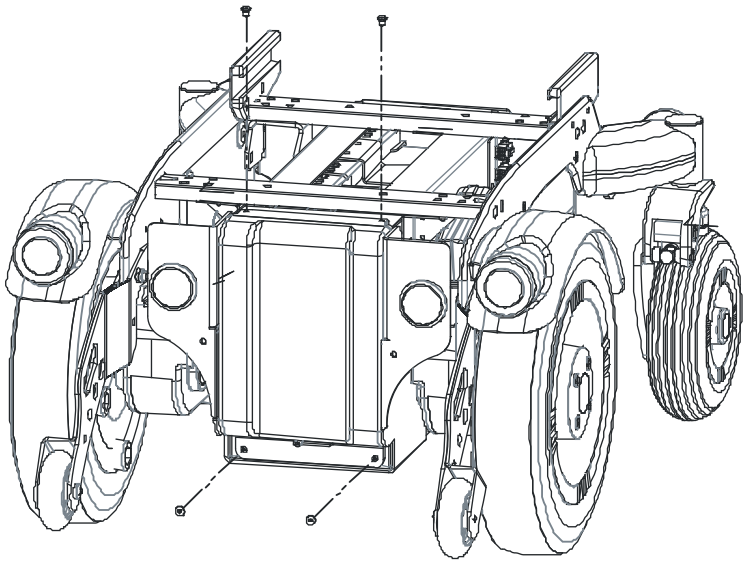


Figure 55

Seeing Figure 56, remove the front cover and unscrew the indicated screw to unlock the battery case.

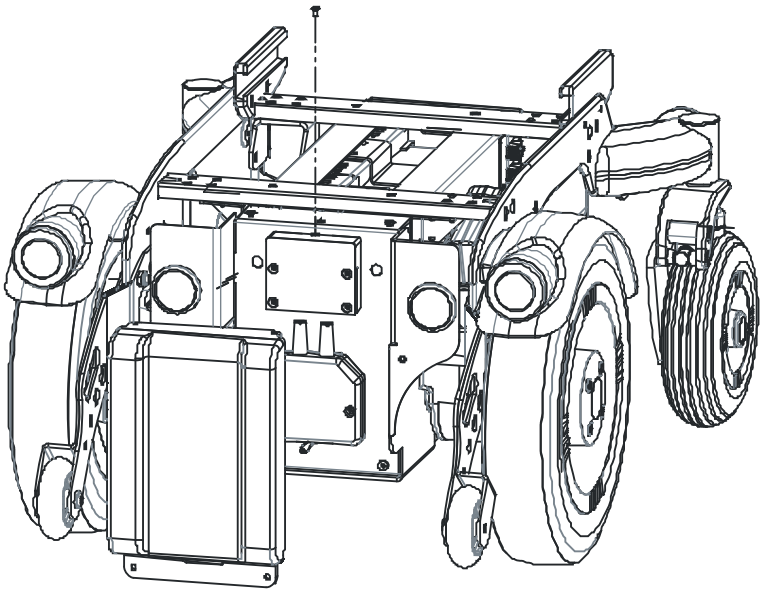


Figure 56

Seeing Figure 57, remove the back cover unscrewing the screws indicated.

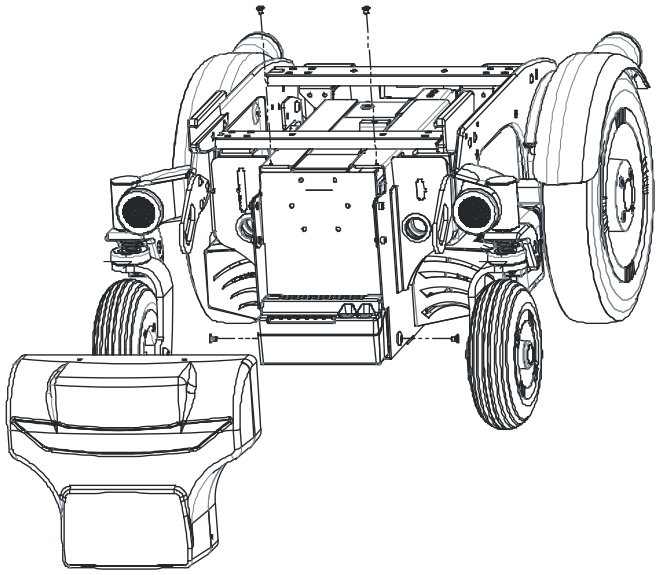


Figure 57

Seeing Figure 58, unscrew the screws indicated and move upward the panel with electronic modules so that it doesn't hinder with the movement of batteries.

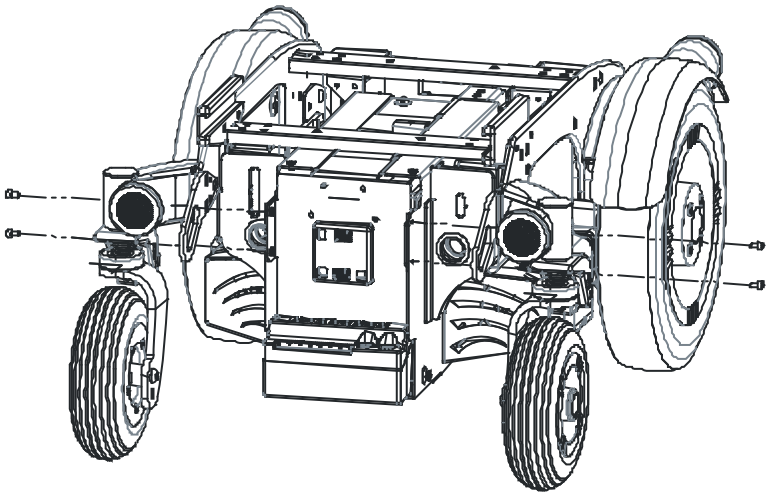


Figure 58

Pay special attention to the cables so that no connection is damaged during operation. If any connection damaged see section 0 for wiring information

Pull the battery set till the first battery is out of the wheelchair chassis. Because of the weight of the battery set, at this point it is recommended to unscrew the screws indicated in Figure 59 and disconnect the wires in order to completely remove one battery.
Then pull the other battery, disconnect the wires and take it away.

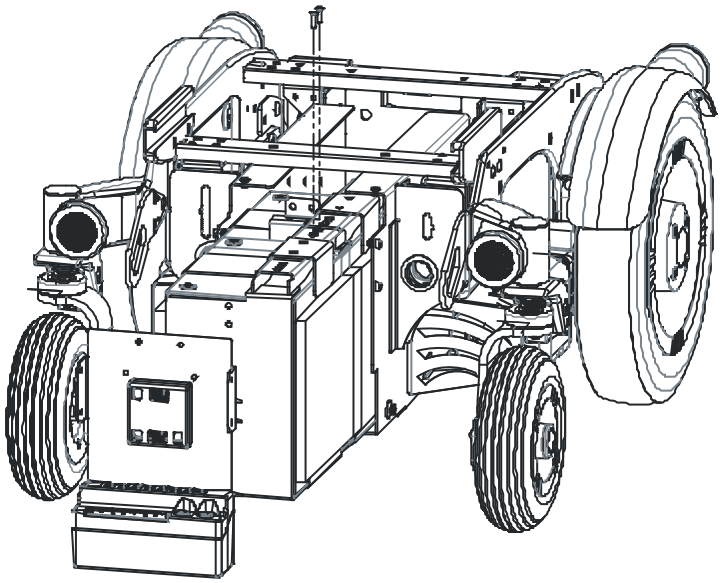


Figure 59

Part number	Description
R042-019	Battery set

To mount new batteries follow instructions in reverse order. For wires connection see Figure 60, there is also a label put on the battery set.

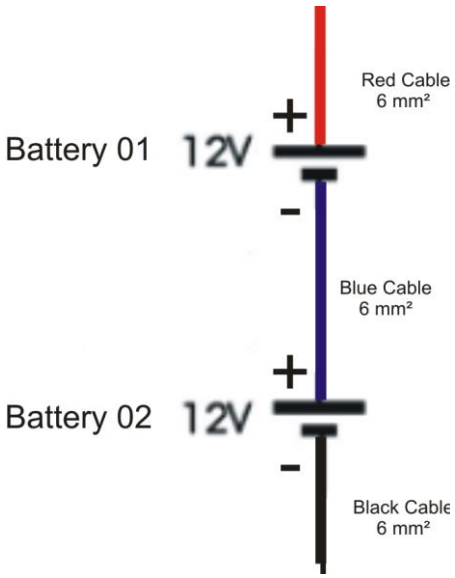


Figure 60

Only after the new battery set is completely assembled, you can turn on the main circuit breaker.

3.9 Light on traction wheel

First assure that the wheelchair is on a level surface and it is at the default position (see section 2.7.2).

If the wheelchair has any problem at the seating system for which it is not possible to reach the default position, please contact the manufacturer

Remove the traction wheel as explained in section 3.4,then remove the screws (1) shown in Figure 61, unplug the cable and take away the plate and the fender in this order.
Keep the plate in order mount again the fender.
Contact the manufacturer to establish the extent of the damage and to decide if it is more convenient a repair or a complete replacement of the part.

In case it is more convenient a repair sent the broken part to the manufacturer.
Pack the part that need to be substituted or repaired and contact the manufacturer to know the address of shipment.
Pay special attention to the packaging in order to avoid any damage during the transport.

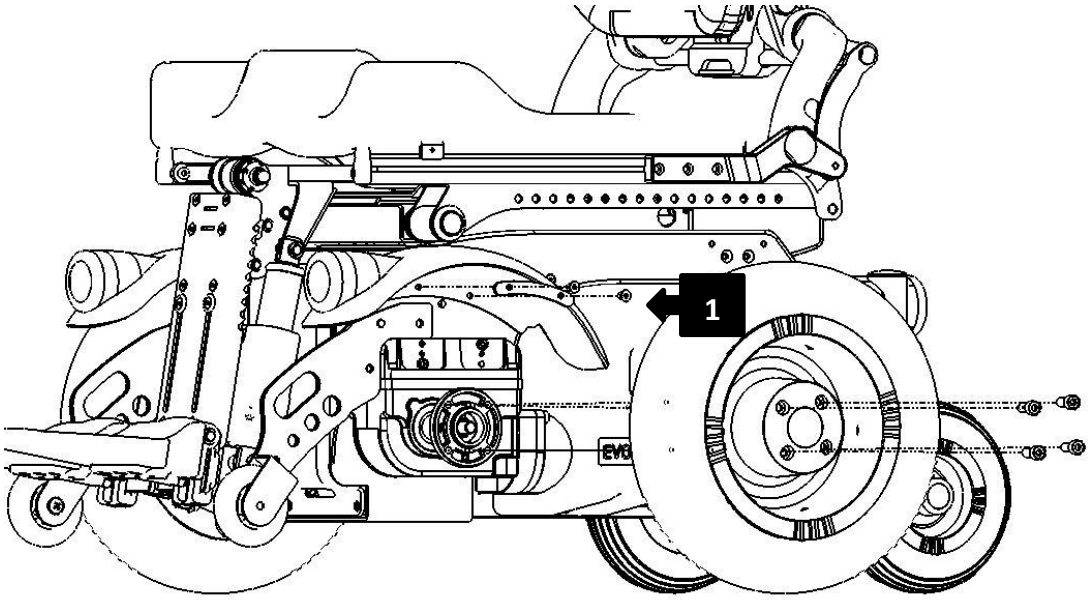


Figure 61

To mount the new part follow the instruction in reverse order.

Part number	Description
R042-021a	Light on traction wheel for FWD wheelchair
R042-021b	Light on traction wheel for RWD wheelchair

These light are front lights for FWD wheelchair and rear lights for RWD wheelchair.

3.10 Light on castor wheel

First assure that the wheelchair is on a level surface and it is at the default position (see section 2.7.2).

If the wheelchair has any problem at the seating system for which it is not possible to reach the default position, please contact the manufacturer

Seeing Figure 62, unscrew the bolt (1) and remove the two parts of the light case. Unplug the cable. Seeing Figure 63, unscrew the two bolt (1) and remove the light.

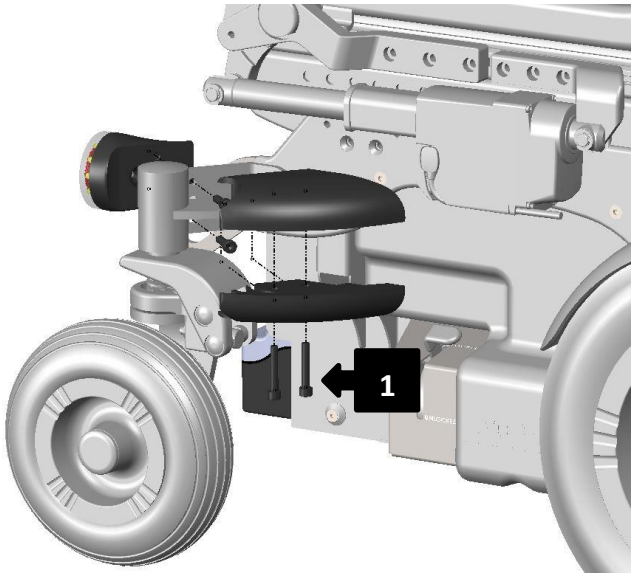


Figure 62

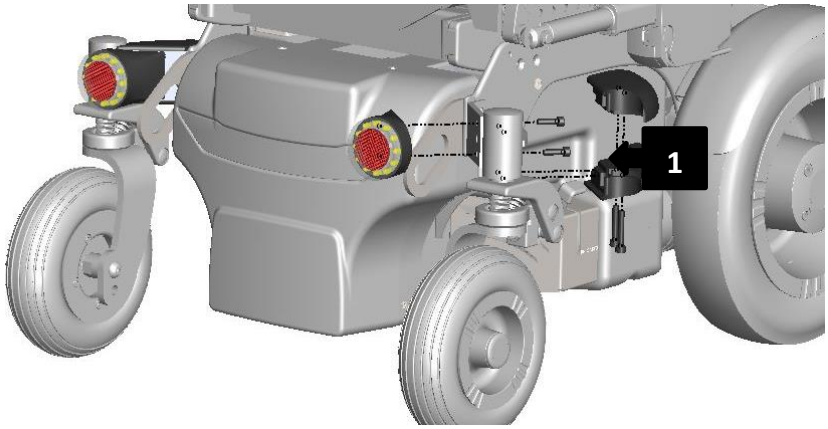


Figure 63

To mount the new part follow the instruction in reverse order.

Part number	Description
R042-022a	Light on castor wheel for FWD wheelchair
R042-022b	Light on castor wheel for RWD wheelchair

These light are back lights for FWD wheelchair and front lights for RWD wheelchair.

3.11 Joystick support

First assure that the wheelchair is on a level surface and it is at the default position (see section 2.7.2).

	If the wheelchair has any problem at the seating system for which it is not possible to reach the default position, please contact the manufacturer

Switch off the wheelchair using the power button on the joystick, see Figure 19. Switch off the main circuit breaker, see section 5.6. Unplug the joystick cable.
Seeing Figure 64 unscrew the two screws below the joystick to remove it.

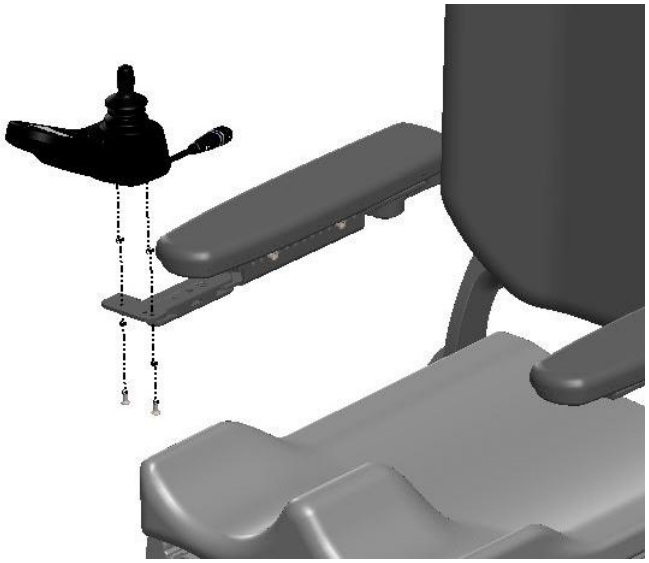


Figure 64

Seeing Figure 65, unscrew the two indicated bolt and remove the support.

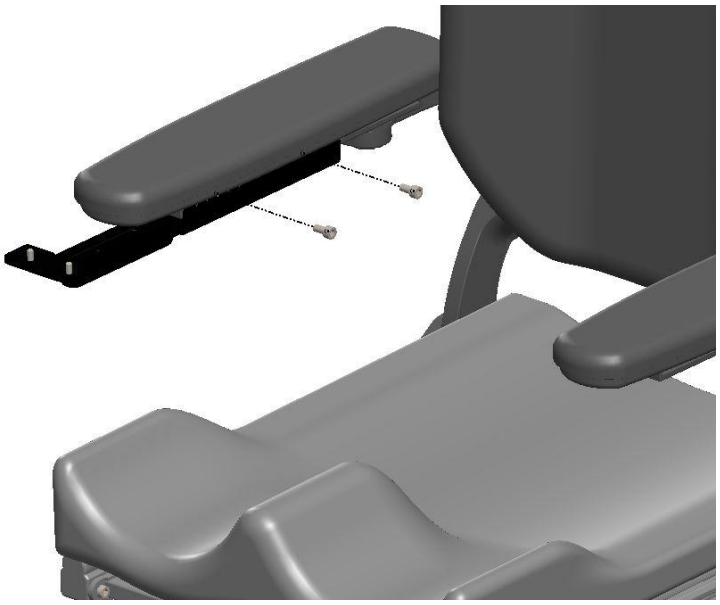


Figure 65

Part number	Description
R042-024	Rh joystick support
R042-025	Lh joystick support

Substitute the support and mount the new part following instruction in reverse order. When connecting again the joystick ensure that the cable is properly connected.

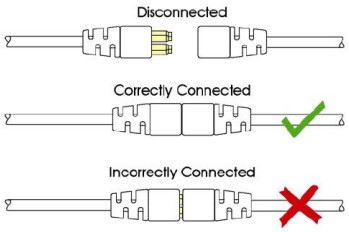


Figure 66

3.12 Power module

First assure that the wheelchair is on a level surface. Lift the seat to the maximum height. Recline the backrest at 90°.

If the wheelchair has any problem at the seating system for which it is not possible to reach the desired position, please contact the manufacturer

Switch off the wheelchair using the power button on the joystick, see Figure 19. Switch off the main circuit breaker, see section 5.7. Unplug the cables from power module. Unscrew the screws indicated in Figure 67 and remove the power module.

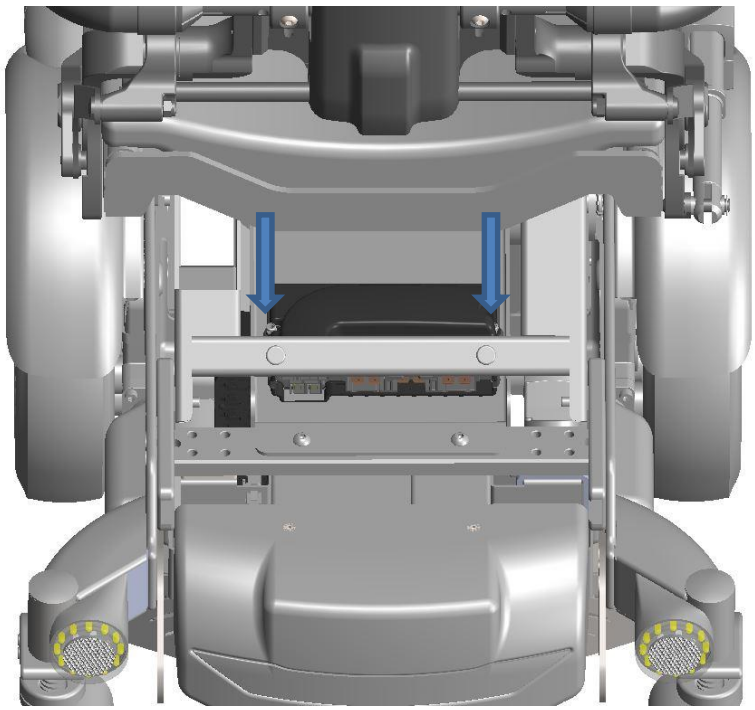


Figure 67

Part number	Description
R042-026	Power module

To mount the new part follow instructions in reverse order. To plug again cables please see Figure 68. For more information please see section 5.2.

<u>After mounting a new power module it is necessary to setup again the software of the wheelchair.</u>
<u>See section 5.3 for more information.</u>

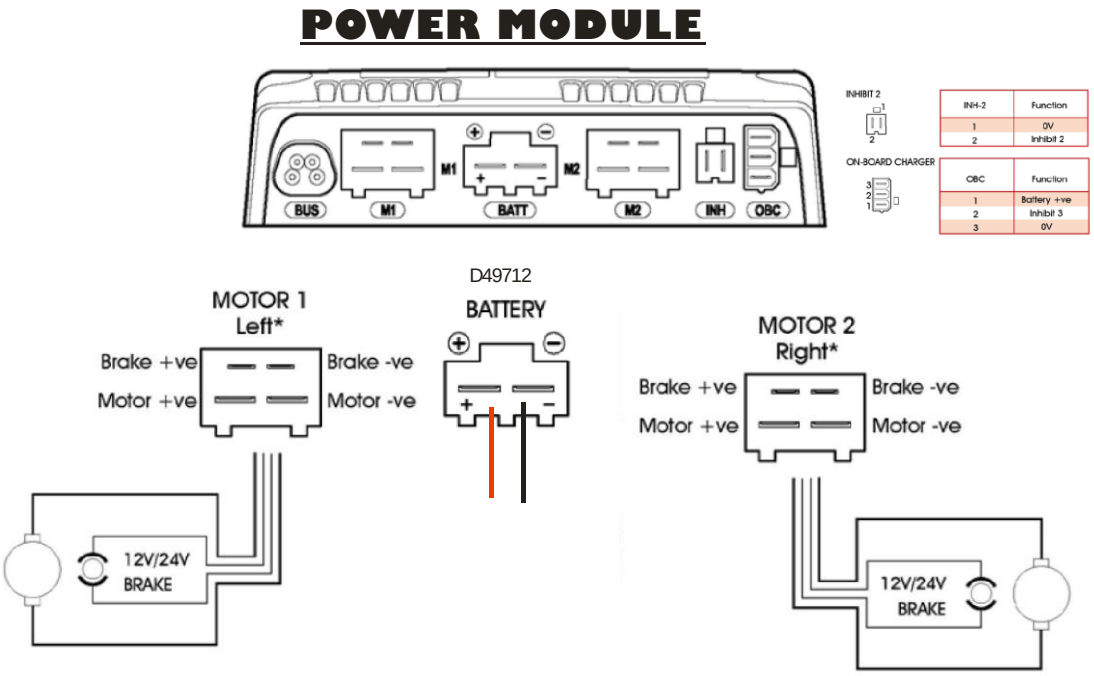


Figure 68

3.13 Light module

For the light module substitution it is necessary to send back the wheelchair to the manufacturer.

Part number	Description
R042-027	Light module

First assure that the wheelchair is on a level surface and it is at the default position (see section 2.7.2).
Switch off the wheelchair and turn off the main circuit breaker, see section 5.7. Pack the wheelchair that need to be repaired and contact the manufacturer to know the address of shipment.
Pay special attention to the packaging in order to avoid any damage during the transport.

If the wheelchair has any problem at the seating system for which it is not possible to reach the default position, please contact the manufacturer

<u>After mounting a new power module it is necessary to setup again the software of the wheelchair.</u>
<u>See section 5.3 for more information.</u>

3.14 Seating module

First assure that the wheelchair is on a level surface and it is at the default position (see section 2.7.2).

	If the wheelchair has any problem at the seating system for which it is not possible to reach the default position, please contact the manufacturer

Seeing Figure 71, remove the back cover unscrewing the screws indicated.

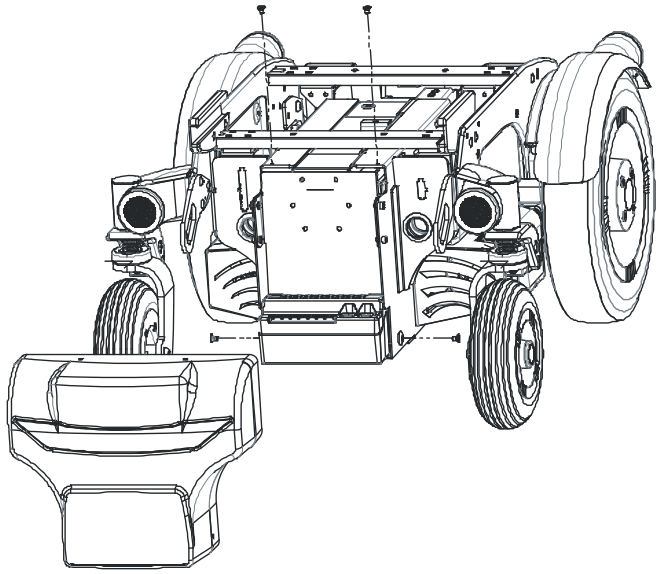


Figure 69

Unplug the cables from the electronics modules on the panel.
Seeing Figure 70, unscrew the screws indicated and remove the panel with electronic modules.

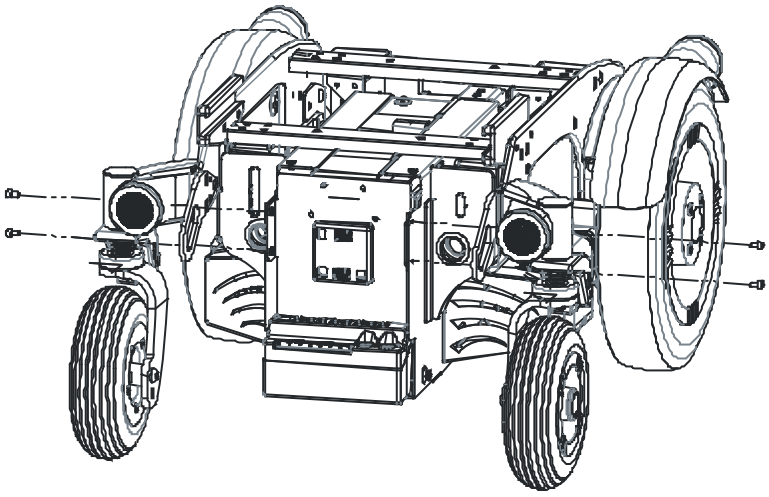


Figure 70

Unscrew the two screws indicated in Figure 71 and take away the seating module.

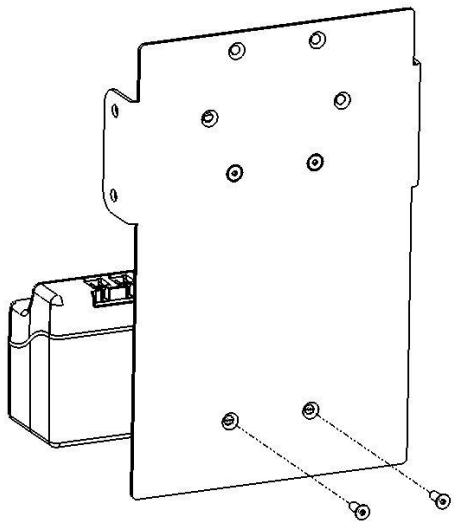


Figure 71

Part number	Description
R042-028	Seating module

To mount the new part follow instructions in reverse order. To plug again cables please see Figure 72 and Figure 73. For more information please see section 5.2.

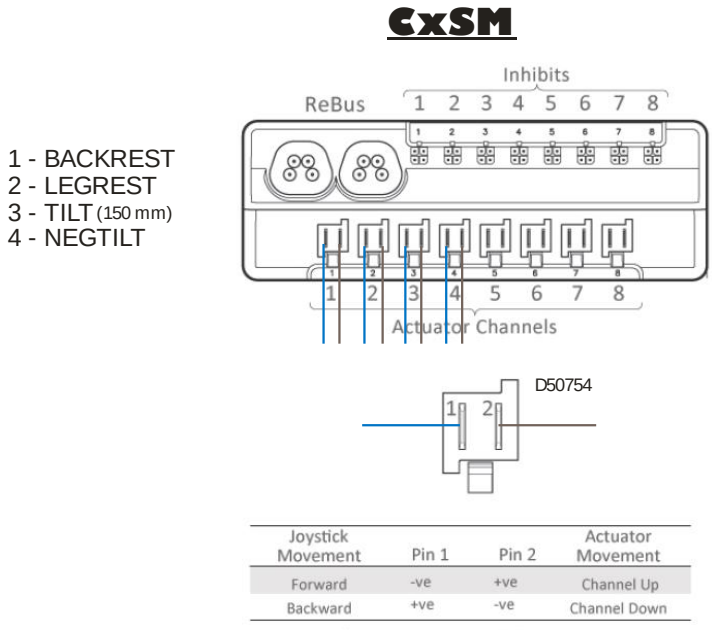

CxSM
1 - BACKREST
2 - LEGREST
3 - TILT (150 mm)
4 - NEGTILT
Inhibits
ReBus
1 2 3 4 5 6 7 8
Actuator Channels
D50754
Joystick Movement | Pin 1 | Pin 2 | Actuator Movement
Forward | -ve | +ve | Channel Up
Backward | +ve | -ve | Channel Down

Figure 72

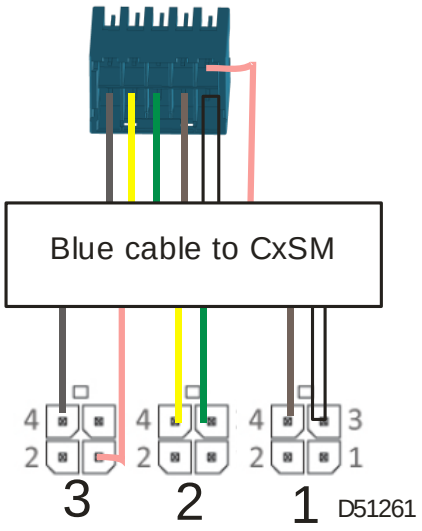


Figure 73

<u>After mounting a new seating module it is necessary to setup again the software of the wheelchair. See section 5.3 for more information.</u>

3.15 Advanced Seating module

First assure that the wheelchair is on a level surface and it is at the default position (see section 2.7.2).

	If the wheelchair has any problem at the seating system for which it is not possible to reach the default position, please contact the manufacturer

Seeing Figure 74, remove the back cover unscrewing the screws indicated.

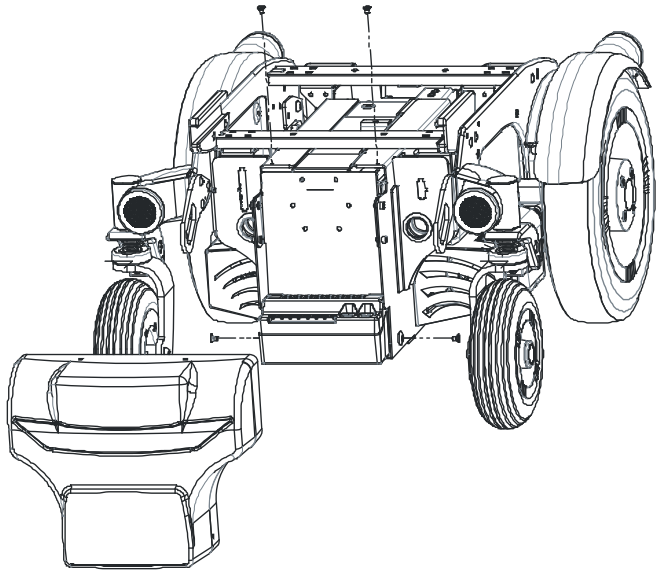


Figure 74

Unplug the cables from the electronics modules on the panel.
Seeing Figure 75, unscrew the screws indicated and remove the panel with electronic modules.

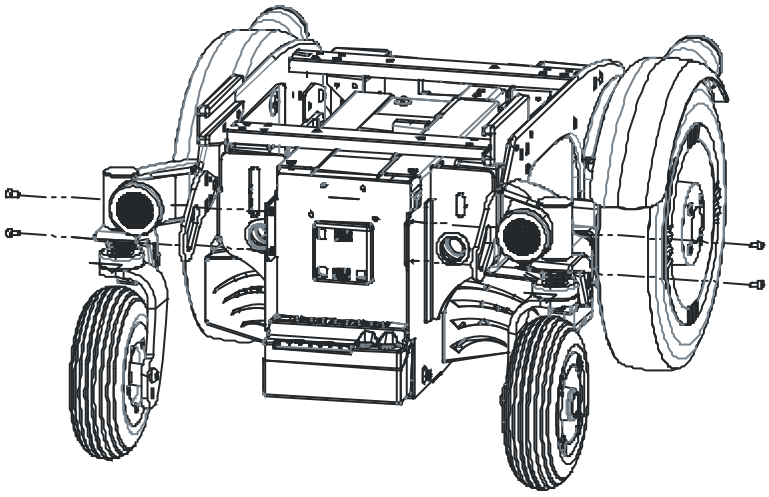


Figure 75

Unscrew the two screws indicated in Figure 76 and take away the seating module.

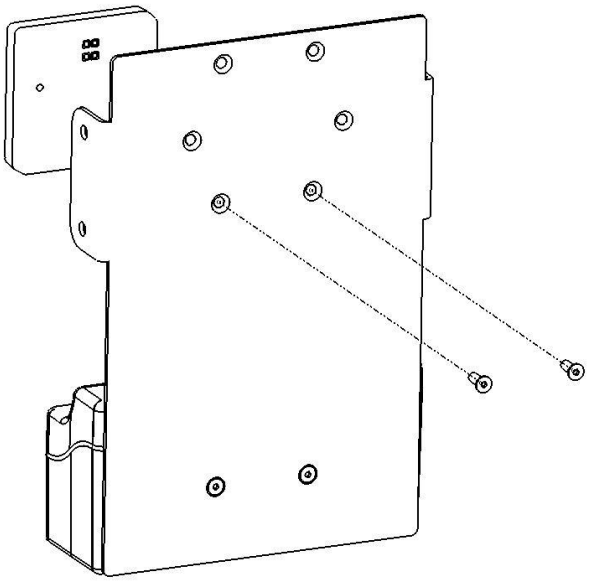


Figure 76

Part number	Description
R042-028	Seating module

To mount the new part follow instructions in reverse order. To plug again cables please see Figure 77 and Figure 78. For more information please see section 5.2.

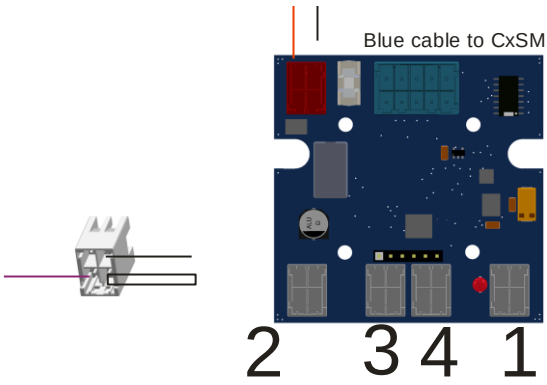


Figure 77

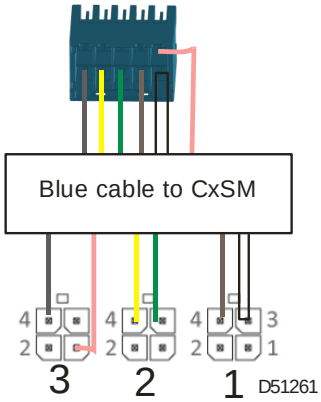


Figure 78

<u>After mounting a new seating module it is necessary to setup again the software of the wheelchair. See section 5.3 for more information.</u>

3.16 Footplate

First assure that the wheelchair is on a level surface and it is at the default position (see section 2.7.2).

	If the wheelchair has any problem at the seating system for which it is not possible to reach the default position, please contact the manufacturer

Seeing Figure 79, unscrew the indicated and substitute the footplate

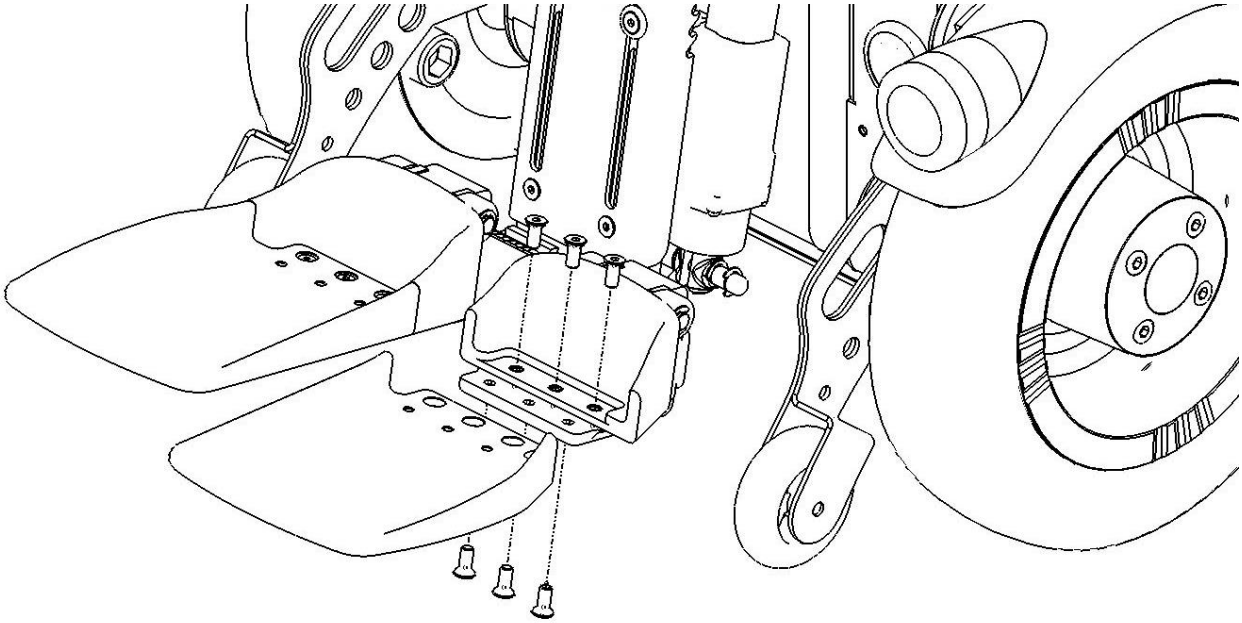


Figure 79

Part number	Description
R042-030rh	Rh footplate
R042-030lh	Lh footplate

3.17 Complete legrest

First assure that the wheelchair is on a level surface and it is at the default position (see section 2.7.2).

	If the wheelchair has any problem at the seating system for which it is not possible to reach the default position, please contact the manufacturer

Remove the seat cushion. Seeing Figure 80 remove the caps (1) and (2) and unscrew the 4 screws of the legrest beam.

Part number	Description
R042-003	Legrest actuator

To mount the new part follow the instruction in reverse order.

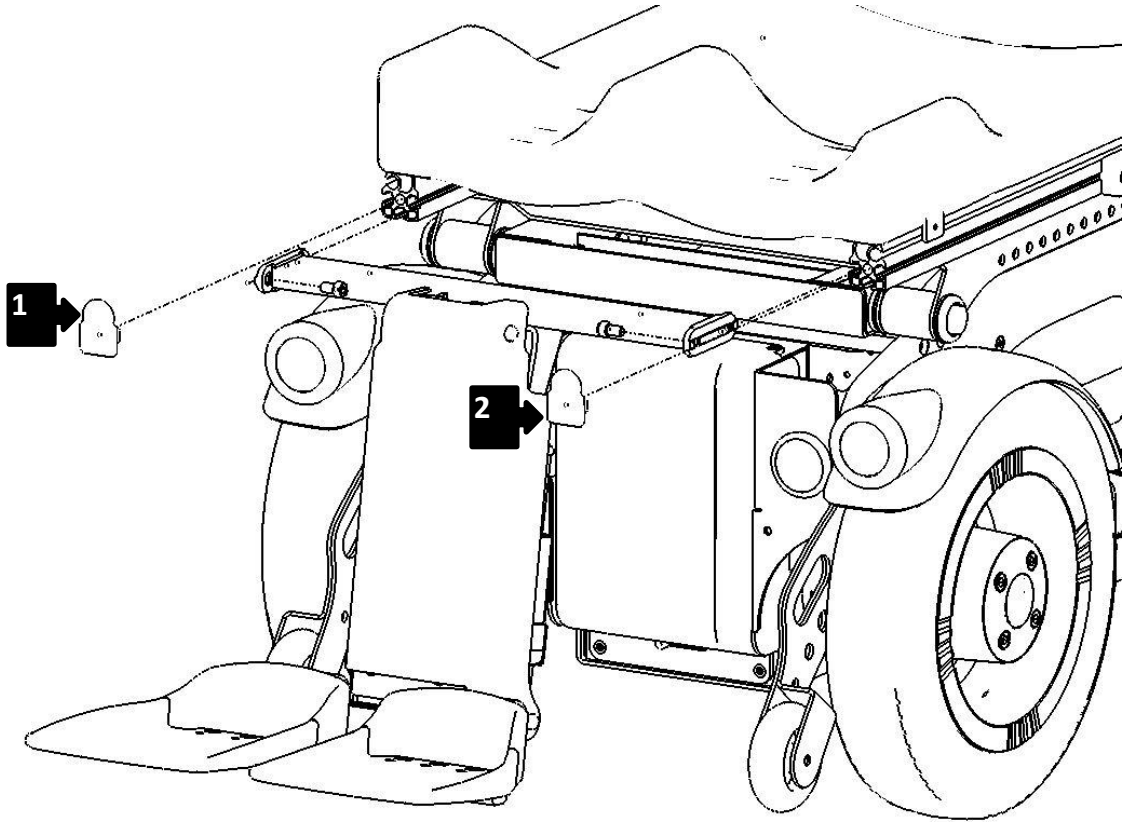


Figure 80

3.18 Legrest belt

First assure that the wheelchair is on a level surface and it is at the default position (see section 2.7.2).

	If the wheelchair has any problem at the seating system for which it is not possible to reach the default position, please contact the manufacturer

Remove the seat cushion. Seeing Figure 81 remove the caps (1) and (2) and unscrew the 4 screws of the legrest beam.
Sent the removed legrest to the manufacturer; it will be repaired and sent back to you.

	Pack the part that need to be substituted or repaired and contact the manufacturer to know the address of shipment. Pay special attention to the packaging in order to avoid any damage during the transport.

Part number	Description
R042-003	Legrest actuator

To mount the new part follow the instruction in reverse order.

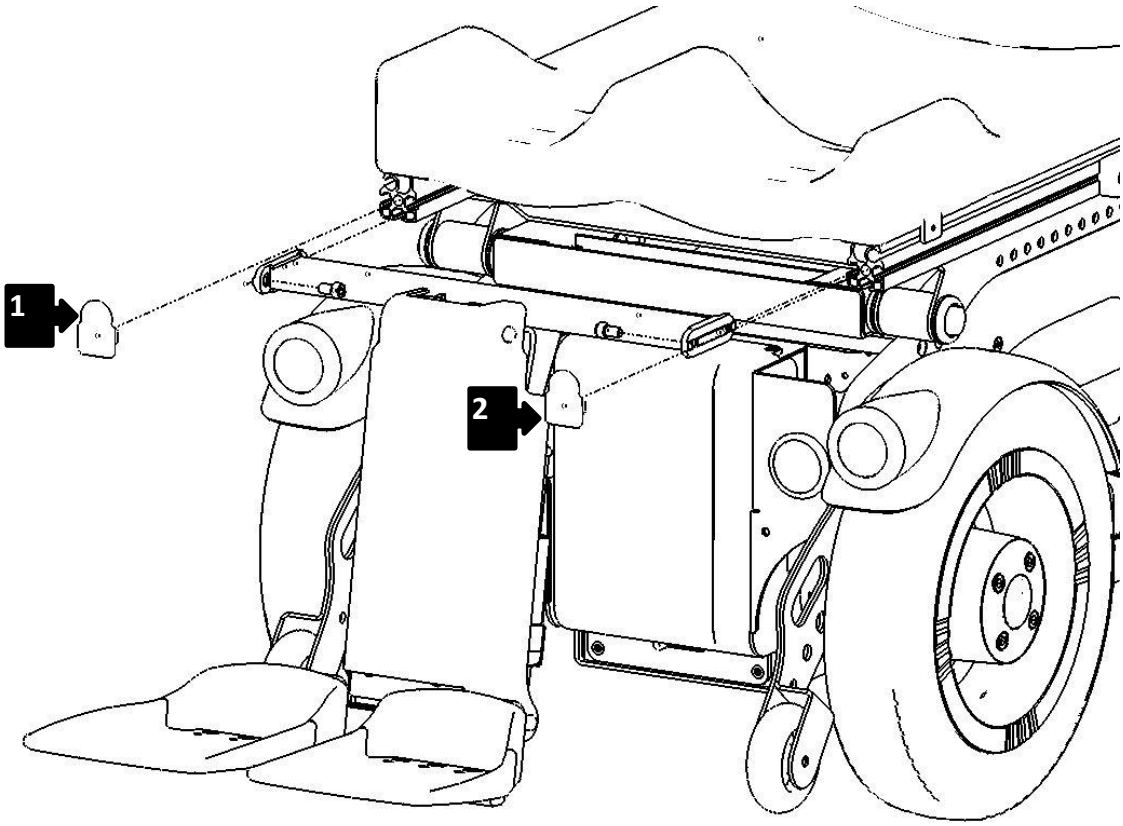


Figure 81

3.19 Cables

In case of damage to any cables or wires of the wheelchair please contact the manufacturer.

4 Maintenance

4.1 Punctured wheels

When the user calls for assistance for a punctured wheel, according to the entity of the damage, choose the replacement of tube or complete tire with tube.
To replace the tube or the tire, see section 2.10.6 or 2.10.7 .

Part number	Description
R042-011a	Tire of traction wheel (with tube)
R042-011b	Tube of traction wheel
R042-013a	Tire of castor wheel(with tube)
R042-013b	Tube of castor wheel

5 Electronics maintenance

5.1 Hardware

Code	Description	Quantity per 1 wheelchair
R042-026	**Power module**	**1**
R042-027	**Light module**	**1 (as accessory)**
R042-028	**Seating module**	**1**
R042-029	**Advanced seating module**	**1**
R042-023	**Joystick**	**1**

5.2 Wiring diagram

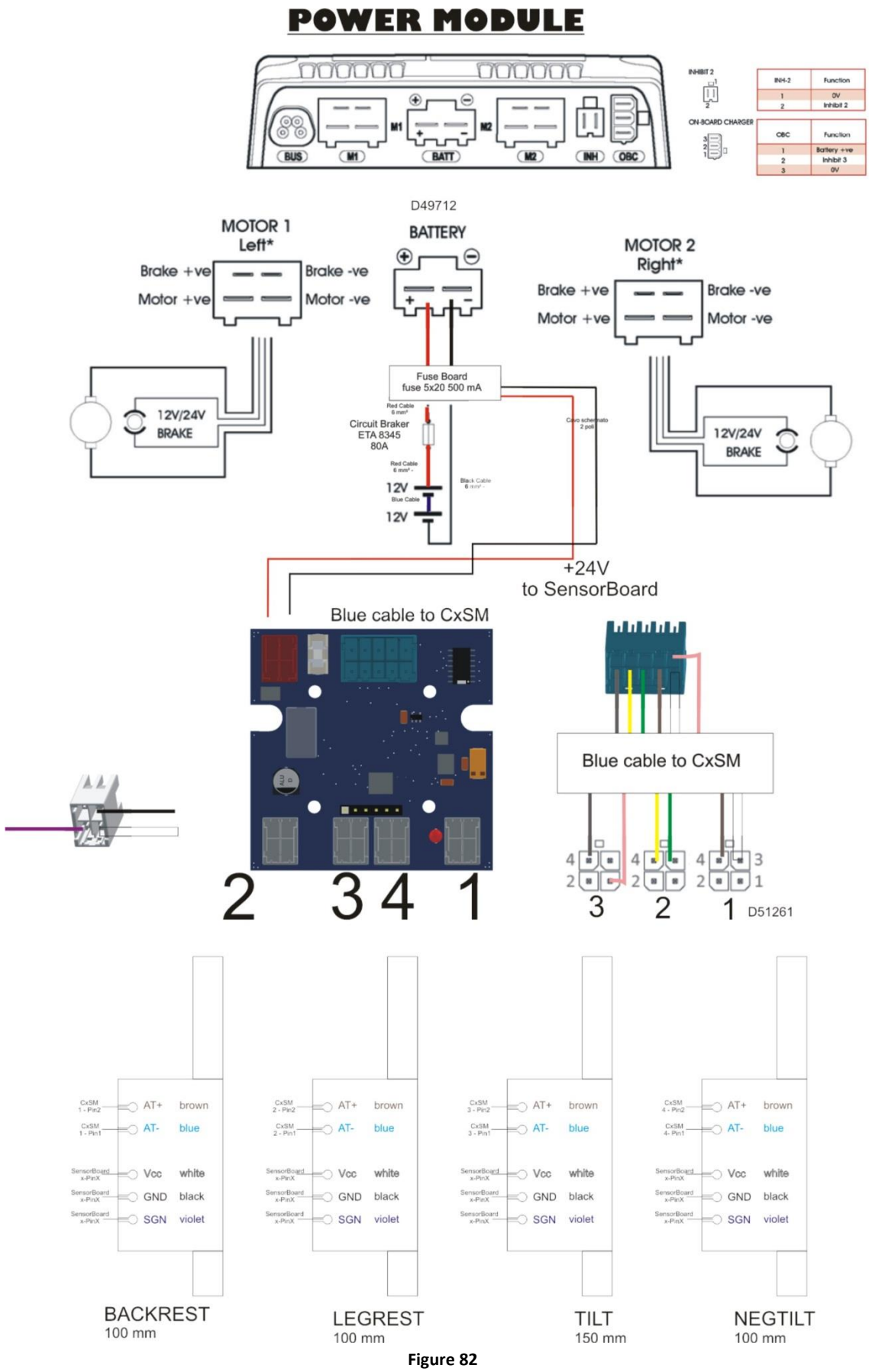
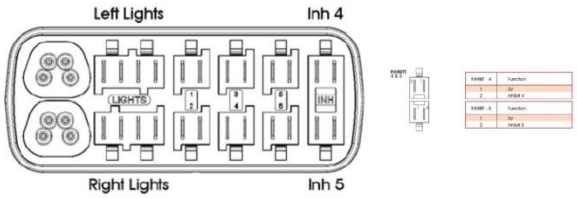
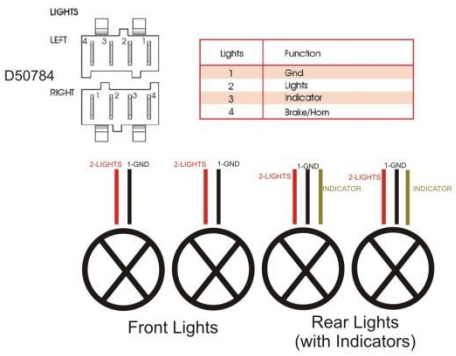


Figure 82

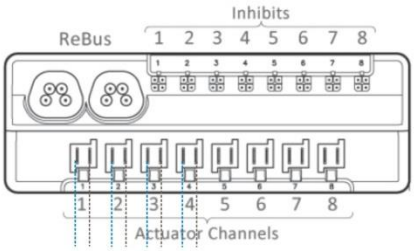
ISM-L

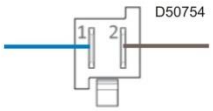




CxSM

1 - BACKREST
2 - LEGREST
3 - TILT (150 mm)
4 - NEGTILT





Joystick Movement	Pin 1	Pin 2	Actuator Movement
Forward	-ve	+ve	Channel Up
Backward	+ve	-ve	Channel Down

	1	2	3	4	5	6	7	8
PIN	FUNCTION	FUNCTION	FUNCTION	FUNCTION	FUNCTION	FUNCTION	FUNCTION	FUNCTION
1	5 V	5 V	5 V	5 V	5 V	5 V	5 V	5 V
2	GND	GND	GND	GND	GND	GND	GND	GND
3	INHIBIT 18	INHIBIT 20	INHIBIT 22	INHIBIT 24	INHIBIT 26	INHIBIT 28	INHIBIT 30	INHIBIT 32
4	INHIBIT 19	INHIBIT 21	INHIBIT 23	INHIBIT 25	INHIBIT 27	INHIBIT 29	INHIBIT 31	INHIBIT 33

CONNECTIONS

Rnet 1.5 m SA77525L15	Power Module>>Light Module
Rnet 0.5 m SA77525L05	Light Module>>CxSM
Rnet 2.5 m SA77525L25	CxSM>>Joystick
Blue cable 10 cm	Sensor Board>>CxSM

Figure 83

5.3 Software

The software of the wheelchair can be classified into these classes:

- Kernel Software of the Rnet System.

  There is no required access, modification or customization of this part of the software.

In the case a reprogramming of the wheelchair is required, please contact the manufacturer to have instructions and the most suitable version of the software.

In case of problems with this part of the software please contact the manufacturer.

- Firmware of the Neatech Sensor Board (advanced seating module)

This part of the software is intended to interface sensors with Rnet CxSM. It has the function of checking for the presence and effective functioning of the sensors of the seating system.

There is no required access, modification or customization of this part of the software.

In case of problems with this part of the software please contact the manufacturer.

- User Software of the Rnet System

This part of the software is made by Neatech. It is intended to customize driving and seating function of the wheelchair. It is responsibility of Neatech to correct program parameters regarding the structure of the wheelchair.
This part of the software can be further divided into two parts: programming of seating function in the CxSm and programming of driving and seating parameters with the Rnet software.

Programming must be conducted only by qualified personnel with in-depth knowledge of the wheelchair and Rnet system.
Any change to this part of the software may result in a hazardous situation for the user.

5.3.1 Software of the Rnet System – On Board Programming

Programming must be conducted only by qualified personnel with in-depth knowledge of the wheelchair and Rnet system.
Any change to this part of the software may result in a hazardous situation for the user.

To manage this part of the software it is required a Rnet Dongle made by Penny & Giles and some special software.
Please contact the manufacturer for more information

On board programming allows the wheelchair to be programmed via the Joystick Module to suit the individual user.
Turn off the wheelchair. Insert the Rnet dongle along the communication cables in the system configuration. Turn on the control system. After initialization press the Mode key (see Figure 19) until the OBP screen is reached.

List of parameters intended to be adjusted in OBP mode:

Profile Name	Sets the profile name
Profile enable	Sets if a profile is available
Mode enable	Sets which modes are available in specific profiles
Input device type	Set which input device is active within a profile
Maximum forward speed	
Minimum forward speed	
Maximum reverse speed	
Minimum reverse speed	
Maximum turn speed	
Minimum turn speed	
Maximum forward acceleration	
Minimum forward acceleration	

Maximum forward deceleration	
Minimum forward deceleration	
Maximum reverse acceleration	
Minimum reverse acceleration	
Maximum reverse deceleration	
Minimum reverse deceleration	
Maximum turn acceleration	
Minimum turn acceleration	
Maximum turn deceleration	
Minimum turn deceleration	
Power:	Reduce power to minimize risk of indoor fittings damage
Torque.	Torque boost to overcome obstacles at low speed settings
Tremor damping:	Adjustable damping to reduce the effect of hand tremor
Momentary screens enabled	
Change profile while driving	
Change speed while driving	
Speed adjust	
Actuator endstop bleep:	**DO NOT MODIFY THIS PARAMETER**
Sounder volume	
Lock function enabled:	Sets how the lock function is activated
Reverse driving alarm	
Emergency stop switch	
Power-up mode	
Joystick forward throw:	Sets the amount of Joystick movement required to reach full speed in this direction
Joystick reverse throw: :	Sets the amount of Joystick movement required to reach full speed in this direction
Joystick left throw:	Sets the amount of Joystick movement required to reach full speed in this direction

Joystick right throw:	Sets the amount of Joystick movement required to reach full speed in this direction
Joystick deadband:	Size of neutral position
Invert left right JS axis	
Invert fwd rev JS axis	
Swap joystick axis.	Swaps the joystick's fwd/rev and left/right axes
Change mode while driving	
Sleep timer:	Sets the period of inactivity before the control system powers down
Standby time:	Sets the period of inactivity before the control system enters standby mode
Switch to standby.	
Mode selection in standby.	Sets if an external input switch can be used to enter standby mode
Remote selection:	Sets whether profiles and mode can be selected and entered with joystick deflections
Background:	Sets the default background for each profile
Latched drive:	Selects latched drive operation
Latched actuators:	Selects latched actuator operation
Latched timeout.	Sets the timeout period for latched operation
Intelligent seating module:	**DO NOT MODIFY THIS PARAMETER**
Seating module.	**DO NOT MODIFY THIS PARAMETER**
Actuator mode entry axis:	Sets the default axis when seating module is entered
Acceleration:	**DO NOT MODIFY THIS PARAMETER**
Deceleration:	**DO NOT MODIFY THIS PARAMETER**
Up speed:	**DO NOT MODIFY THIS PARAMETER**
Down Speed:	**DO NOT MODIFY THIS PARAMETER**
Steer correct:	Adjusts the Power Module outputs to compensate for mis-matched motors
Display speed:	Sets whether the speed and odometer is displayed in miles per hour or kilometers per hour
Maximum displayed speed:	Sets the graphical speed display

5.4 Software of Rnet system – changing parameters

To arrange the programming of special seating position, it is possible to use a special version of the Rnet software.

Programming must be conducted only by qualified personnel with in-depth knowledge of the wheelchair and Rnet system.
Any change to this part of the software may result in a hazardous situation for the user.

To manage this part of the software it is required a Rnet Dongle made by Penny & Giles and some special software.
Please contact the manufacturer for more information

To know the latest update version and for more information please contact the manufacturer

BACKREST

UP: Move the backrest UP till the angle of backrest is more than a customizable value.

DOWN: Move the backrest down till the angle of backrest is less than a customizable value.

The angle of the backrest is calculated respect the chassis inclination, not respect the seating inclination.

The parameter PG1 sets the maximum angle of the backrest. The range is 150°-165°. It must be greater than the parameter PG4. Default value is 165°.

The parameter PG4 sets the minimum angle of the backrest. The range is 90°-125°. It must be less than the parameter PG4. Default value is 90°.

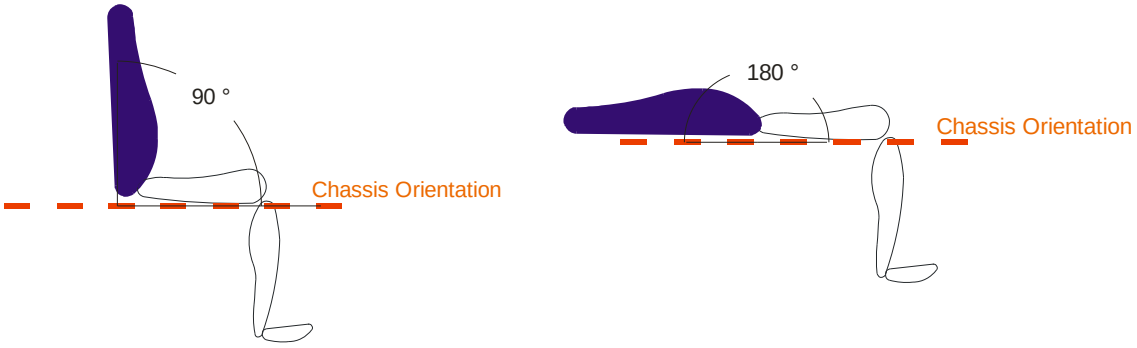


Figure 84

LEGREST

UP: Move the legrest UP till the legrest is parallel to the direction of the chassis.

DOWN: Move the legrest DOWN till there are danger crash into the chassis

During both UP and DOWN function the system checks for the presence of danger of crash into the floor. In case of danger the seat will lift up before move the legrest.

The angle of legrest is measured respect the inclination of the chassis, not respect the seating inclination.

The parameter PG2 sets the minimum inclination of the legrest to avoid crash into the chassis.

Default value is 90°.

The parameter PG6 sets the initial length of the legrest when it is completely closed. It is in cm and the admissibility range is 30-50 cm.

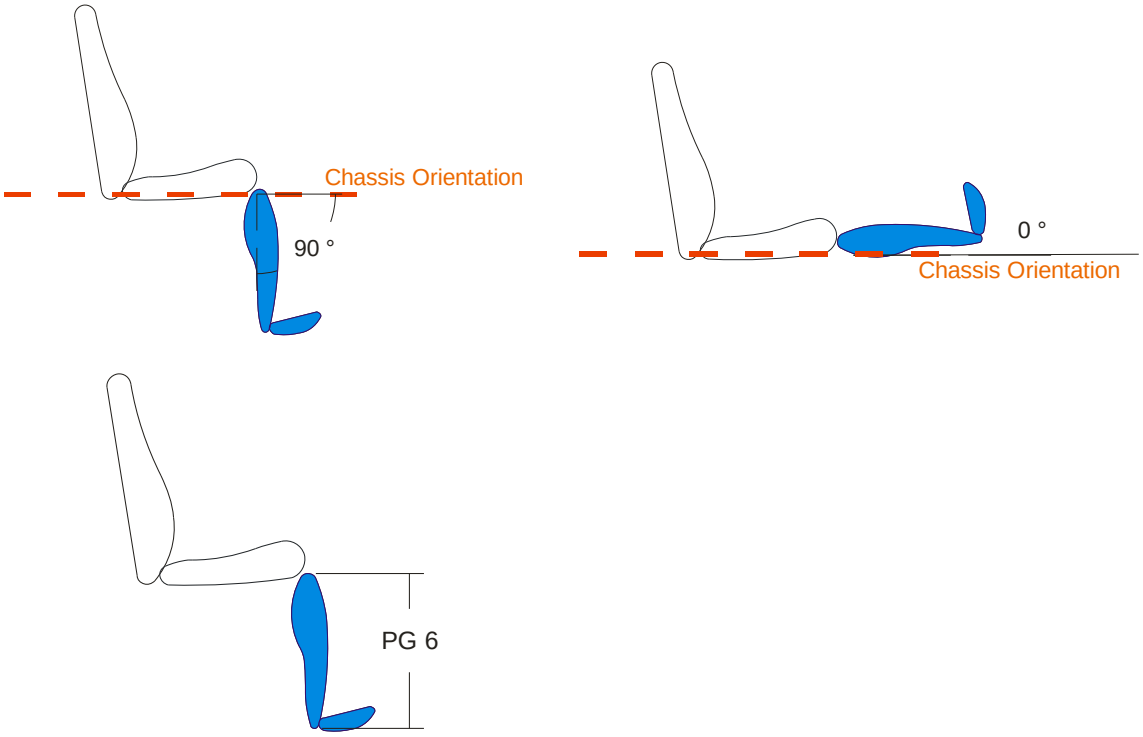


Figure 85

LIFT

UP: Lift the seat UP. For security reasons, if the seat is tilted forward, first it straightens the seat.

DOWN: Lift the seat DOWN. It checks if there are any crash danger (into the chassis or into the floor) for the legrest.

Both UP and DOWN function provide for a calculation in order to consider the different weight on the front and back side of the seat and to decide the power of the two actuators that move the seat to make the seat to move in a straight way.

TILT

First it checks the initial inclination of the seat.

If the seat is forward inclined:

UP: Incline forward the seat till the maximum customizable position.

DOWN: Incline downward the seat till the horizontal position.

If the seat is horizontal:

UP: Incline forward the seat till the maximum customizable position.

DOWN: Incline downward the seat till 45°

If the seat is rearward inclined:

UP: Incline forward the seat till the horizontal position.

DOWN: Incline downward the seat till 45°

When tilting down if the angle of the backrest exceeds the value set with the parameter PG1, the backrest will move UP.

The parameter PG3 sets the maximum negative tilt angle.

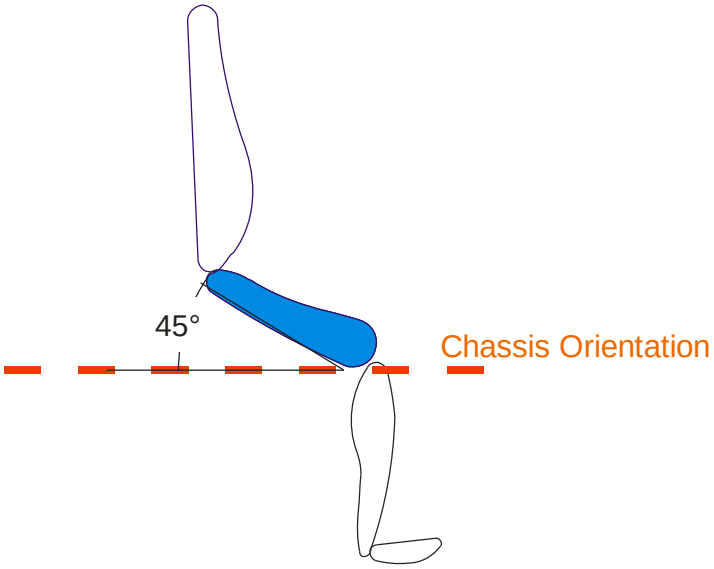


Figure 86

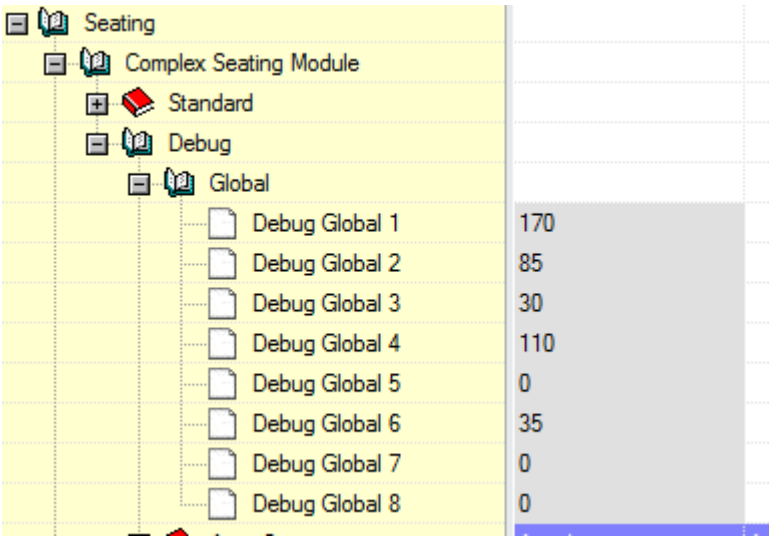

Seating
Complex Seating Module
Standard
Debug
Global
Debug Global 1
170
Debug Global 2
85
Debug Global 3
30
Debug Global 4
110
Debug Global 5
0
Debug Global 6
35
Debug Global 7
0
Debug Global 8
0

Figure 87

ASSIST (AXES 5)

This position is useful to facilitate movement in and out the wheelchair.

It is possible to set the angle of backrest, the angle of legrest and the height of the seat, setting the parameters PA1, PA2 and PA3

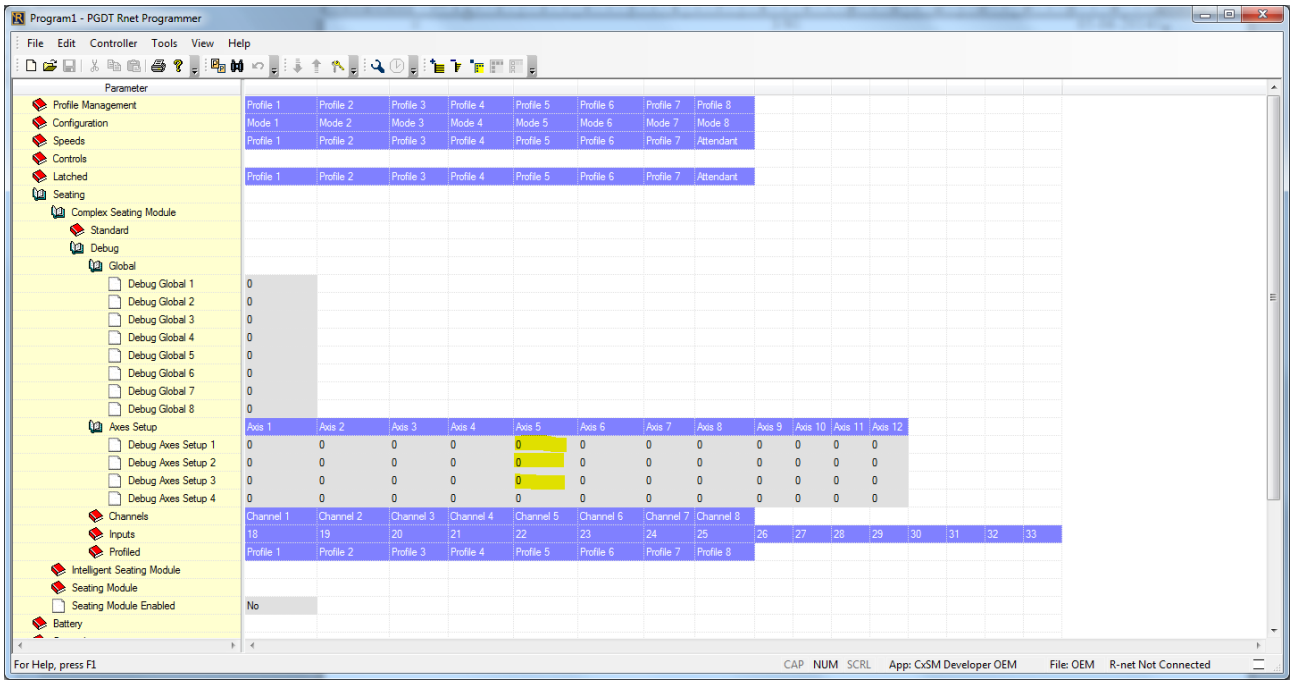


Figure 88

SEMISTANDING (AXES 6)

This position is useful to drive the wheelchair with a minimum lift and negative tilt

It is possible to set the angle of backrest, the angle of legrest, the height of the seat and the angle of the seat setting the parameter PA1, PA2, PA3 and PA4

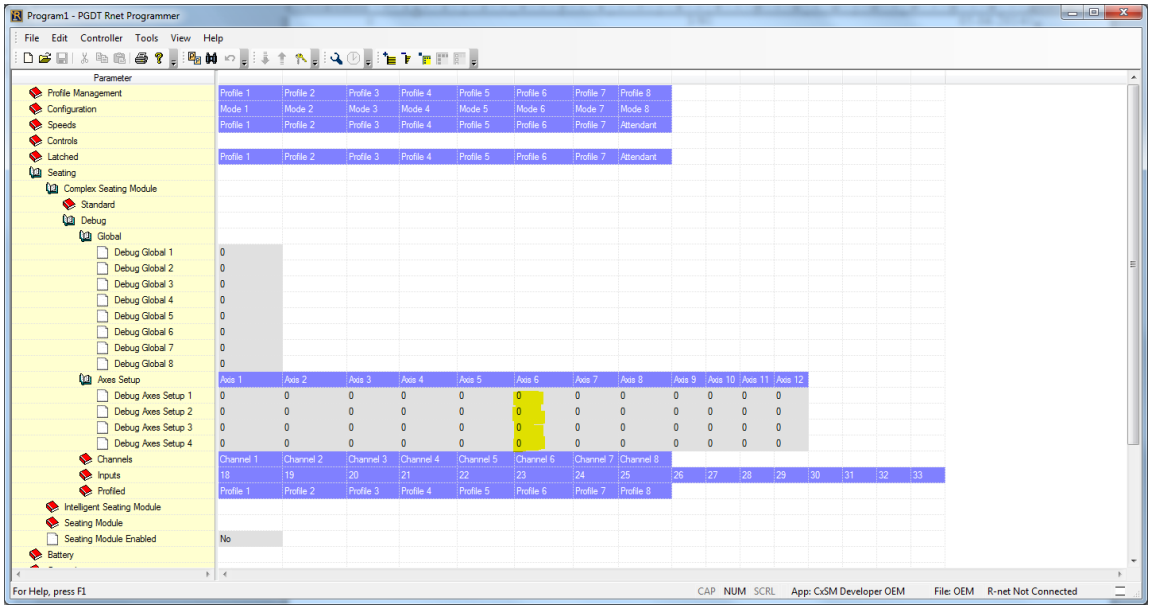


Figure 89

STAND UP (AXES 7)

This position is useful to stay on the wheelchair with a little negative tilt and legrest totally opened.

It is possible to set the angle of backrest, the angle of legrest, the height of the seat and the angle of the seat setting the parameter PA1, PA2, PA3 and PA4

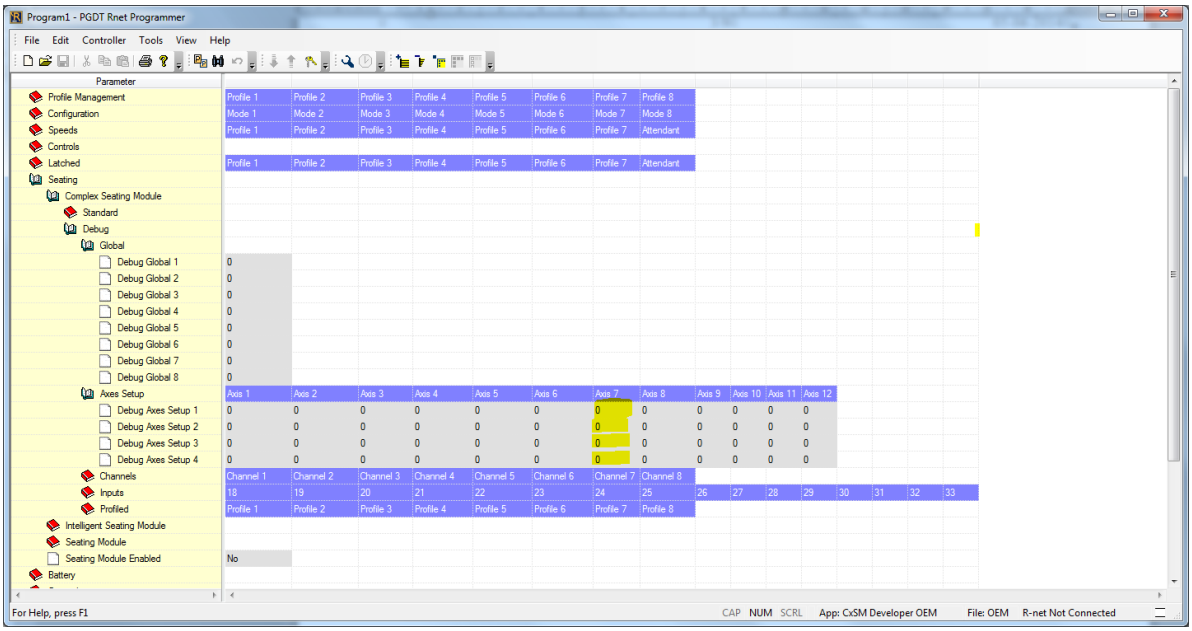


Figure 90

LAY DOWN (AXES 8)

This position is useful to lying down on the wheelchair. Backrest and legrest will totally open and seat will straight. It is possible to choose the height of the seat setting the parameter PA1

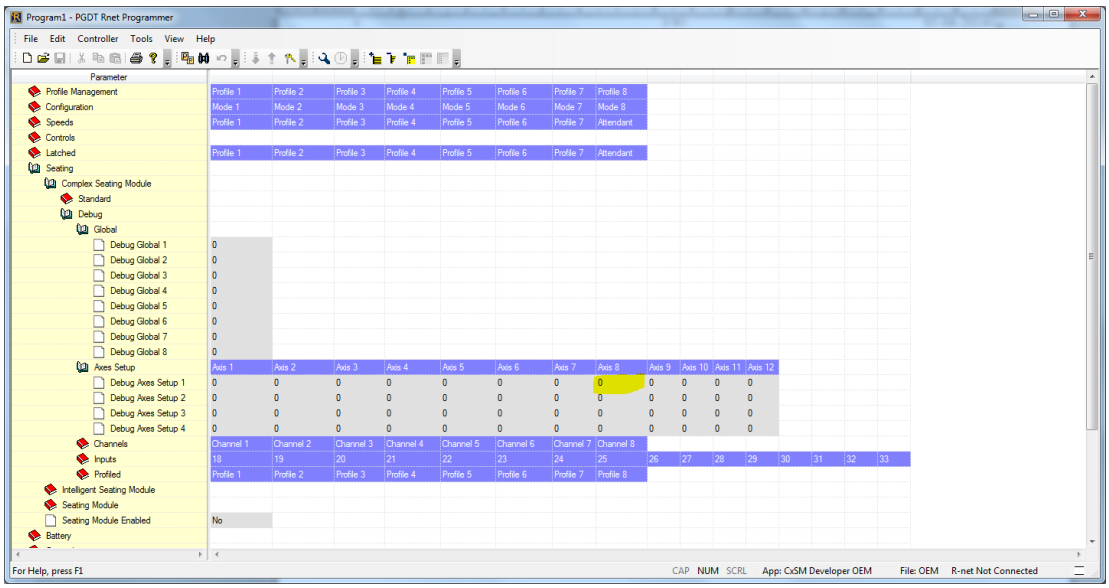


Figure 91

RESET

When using the functions Assist, Semistanding, Stand Up with the joystick in direction DOWN the wheelchair will return to the zero position. First it will be straighten the seat, then the seat will come down and backrest and legrest will totally close.

5.5 Electronic Troubleshooting

Problems	Possible cause	Action
The wheelchair doesn't start	Batteries discharged	Charge the batteries
	Any Rnet cable not properly inserted	Check all Rnet cables
The wheelchair cannot be driven	Battery charger connected	Disconnect the battery charger
	Brake release lever not correctly engaged	Set properly the brake release lever (UP)
The wheelchair can only be driven at reduced speed	The position of the seating system is such that some inhibition occurs	Set the wheelchair in the DEFAULT POSITION, see section 2.7.2
The wheelchair cannot be charged	Main circuit breaker switched off	Turn off the main circuit breaker. If the problem persists see section 5.6

5.6 Rnet system fault

When the control system is triggered and the wheelchair can't be used, a diagnostic screen is displayed in the display of the joystick.
First switch off the wheelchair and leave it off for some minutes. Then reboot the wheelchair. If the fault still continues, contact an authorized service center.

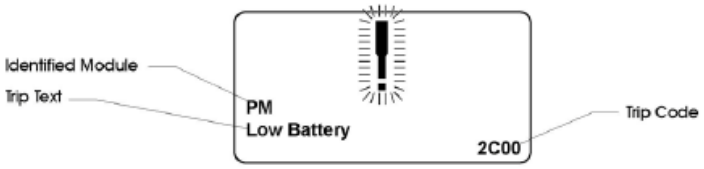


Figure 92

Seeing Figure 35:

- Identified Module indicates the module that had the problem
  For example:
  PM Power Module
  JSM Joystick
  ISM Light Module
  CxSM Seating Module
- The Trip Text is a brief description of the problem
- The Trip Code is a four digit code that allow an authorized service center to identify the problem

Trip code	Possible cause	Action
Center Joystick	The most common cause of this trip is if the joystick is deflected away from center before and during the time the control system is switched on. The joystick displaced screen will be displayed for 5 s. If the joystick is not released within that time then a trip is registered.	Ensure that the joystick is centered and power the control system. If the trip is still present then the joystick may be defective. See section 2.10.9
Low battery	This occurs when the control system detects that the battery voltage has fallen below 16 V	Check the condition of the batteries and connections to the Rnet system. If the trip is still present after the batteries and connections have been checked, than the Power Module may be defective. See section 3.12.
High battery voltage	This occurs when the control system detects that the battery voltage has risen above 35 V. The most common reasons for this are overcharging of battery or bad connections between the control system and the batteries.	Check the condition of the batteries and the connections to the control system. If the trip is still present after the batteries and connections have been checked, then the Power Module bay be defective. See section 3.12.
Brake error **1505 M1** **1506 M2**	This occurs when the control system detects a problem in the solenoid brakes or the connections to them.	Check the solenoid brakes, cables and connections to the control system. If the trip is still present after the above checks have been mane, then the Power Module may be defective. See section 3.12.

Motor error **3B00 M1** **3C00 M2**	This occurs when the control system detects that a motor has become disconnected	Check the motors, cables and connections to the control system. If the trip is still present after the above checks have been mane, then the Power Module may be defective. See section 3.12.
Inhibit active **1E01** **1E20** **1E21** **1E22** **1E23**	This occurs when any of the inhibit inputs are active and in a latched state	Reboot the wheelchair. This will drop out of Latched Mode and clear the trip
Lamp short **7205 Left lamp short** **7209 Right lamp short**	This occurs when a short in either of lamps circuit is detected.	Check the lamps, cables and connections. If the trip is still present after the above checks have been made, then the Light Module may be defective. See section 3.13.
Indicator lamp short **7206 Left indicator short** **720A Right indicator short**	This occurs when a short in either of indicators circuit is detected.	Check the indicators, cables and connections. If the trip is still present after the above checks have been made, then the Light Module may be defective. See section 3.13.
Indicator lamp failed **7207 Left indicator failed** **7208 Right indicator failed**	This occurs when a failure in either of indicators circuit is detected.	Check the indicators, cables and connections. If the trip is still present after the above checks have been made, then the Light Module may be defective. See section 3.13.

Over current	This occurs when the control system detects an excessive amount of current in an actuator channel. This may be due to a faulty actuator motor, cables or connections	Check the movement of the actuator is not obstructed. If the trip is still present after above checks have been made, the Seating Module may be defective. See section 3.14.
Overtemp	This occurs when the actuator circuitry has become too hot.	Allow the seating module to cool. If it is frequently overheating check the condition of the actuator motors and connections. If the trip persists contact the manufacturer.
DIME error	This occurs when the control system detects an identification conflict between two modules in the system	If a new module has been introduced: disconnect the new module and reboot the wheelchair, if no trip is present connect the new module to the system and reboot the wheelchair, if the trip reappears then the new module must be the cause of the problem. If there have been no additions: Disconnect one module at a time and reboot the wheelchair. If the trip is still present after the above checks have been made, contact the manufacturer.
Memory error	This is a non-specific memory error that could be caused by any of the modules within the system	Check all cables and connections. Reboot the wheelchair. If the trip is still present after the above checks have been made, then the Power Module may be defective. See section 3.12.

PM Memory Error	This is a specific Power Module based trip.	Check all cables and connections. Reboot the wheelchair. **Reprogram the Rnet system. See section 5.3.** If the trip is still present after the above checks have been made, then the Power Module may be defective. See section 3.12.
Bad cable	This occurs when the control system detects a fault in the wiring	Check all cables and connections for continuity. If there is any visible damage to cables, replace and reboot the wheelchair. Disconnect one cable from the system at a time cycling the power after each disconnection. If the trip is still present after the above checks have been made, then the Power Module may be defective. See section 3.12.
Bad Settings	This occurs when the control system detects incorrect or invalid program settings.	**Reprogram the Rnet system. See section 5.3.**
CxSM module error **9612**	A problem occurred with the cable between the CxSM and the advanced seating module (sensor board)	Reboot the wheelchair. Check the cable is properly inserted. If the trip still continues please contact the manufacturer.
CxSM module error **9612**	A problem occurred with some actuators or cable.	Reboot the wheelchair. Check the cables of actuators are properly inserted. If the trip still continues please contact the manufacturer.

5.7 Magneto hydraulic protection

Use the switch, see Figure 93 and Figure 94 to turn on and off the EVO3.
The switch also has the function of protecting the wheelchair from overloaded current and short circuit.

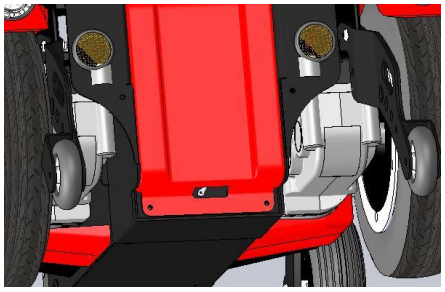


Figure 93

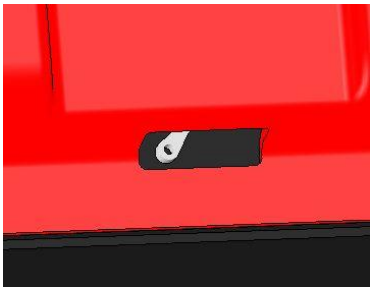


Figure 94

If the power chair suddenly stops, use the switch to turn on the chair. If the problem still continues, it means that there are some electric problems:

- Check for any damaged cables, for more information see section 5.2.
- Check for any damage in connections, for more information see section 5.2.

In these cases, there is often a major electrical fault. The cause of fault should be checked carefully.

For more information please contact the manufacturer.

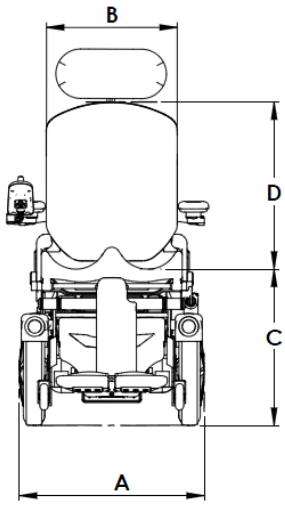
6 Specifications

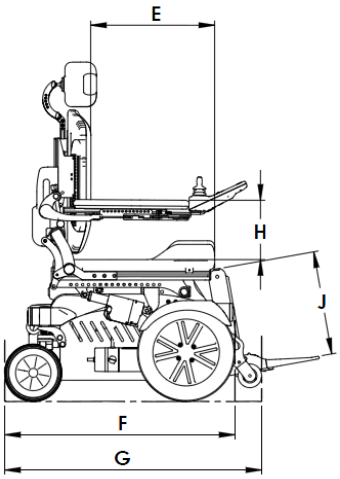
General Feature	Value
Product code - name	S042 – Evo3
Class (EN 12184)	Class B
Enclosure class	IPX4

Performance Feature	Value
Maximum user weight	80 kg
Range	25 km
Obstacles climbing	50 mm
Maximum safe slope **Static stability**	6° 9°
Maximum speed	RWD: 10 km/h FWD: 6 km/h
Batteries	55Ah 12V Sealed Type
Motors	2x220W
Main circuit breaker	80 A
Control force	Joystick 3N
Environmental temperature	-10 °C - +50 °C
Level of resistance to ignition	The wheelchair is compliant with EN 12184
Expected lifetime	5 years

Dimensions		Value
Weight		Maximum 125 kg
Seat Width	**Min-Max**	28-46 cm
Seat Depth	**Min-Max**	M1 34-42 cm M2 38-46 cm M3 42-50 cm M4 44-52 cm
Seat Height without cushion		410 mm
Seat Height: with cushion		470 mm
Total Width chassis incl. seat		M1 57 cm chassis - 48 cm including seat and armrests M2 57 cm chassis - 52 cm including seat and armrests M3 57 cm chassis - 56 cm including seat and armrests M4 57 cm chassis - 60 cm including seat and armrests
Total Length chassis incl. seat		Fwd 88 cm without footrest FWD 112 cm con with footrest RWD 80 cm without footrest RWD 109 cm con with footrest
Clearance floor-chassis		66 mm
Minimum turning radius		RWD 850 mm FWD 655 mm
Tire pressure		DRIVE WHEELS: 280 kPa CASTOR WHEELS: 250 kPA

6.1 Dimensions





A	56 cm	D	M1 34-39 cm M2 39-44 cm M3 44-49 cm M4 44-49 cm	F	78 cm
B	M1 28-30 cm M2 32-34 cm M3 36-38 cm M4 40-42 cm	E	M1 34-42 cm M2 38-46 cm M3 42-50 cm M4 44-52 cm	G	87 cm
				H	20-30 cm
C	47 cm			J	M1 30-38 cm M2 30-38 cm M3 38-44 cm M4 38-44 cm

7 WARRANTY TERMS

Evo3 is a product globally guaranteed for 24 months with the exception of batteries that are guaranteed for six months. The warranty covers defects in materials or workmanship. The warranty doesn't cover parts subject to usury or damaged parts by: overload, misuse, alterations and repairs made by unauthorized third parties.
The warranty expires in case of tampering, improper storage, unauthorized or incorrect maintenance.

7.1 SERIAL NUMBER

For any report or assistance request communicate the unique identification code on the chassis of each Evo3 as shown in Figure 95

Figure 95

7.2 INCIDENT REPORTING

If an incident occurs please contact an authorized service center. For a list of authorized service center please contact the manufacturer:

Neatech.it
4/A, A. de Curtis, 80040, Cercola (NA), Italy
www.neatech.it – info@neatech.it - +39 081 555 1946

MODEL:	EVO3
SERIAL NUMBER:	
YEAR OF CONTRUCTION:	
MAXIMUM USER WEIGHT:	
MADE IN:	

SERVICE MANUAL

EVO3

PRODUSENT

NEATECH™

www.neatech.it

LEVERANDØR NORGE

PICOMED Mobility

Sønna veien 37. 1476 Rasta
Telefon: 90615377 Telefon Sentralbord: 37119950
E-mail: mobility@picomed.no